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PICK IT UP

. . . and DROP IT IN!

IT'S AS SIMPLE AS THAT TO INSTALL THE VALVE ASSEMBLY IN A BAKER BAKWIK MODEL "B" DRILL PIPE FLOAT

NO TOOLS OR SPECIAL WRENCHES ARE REQUIRED

The Baker Bakwik Model "B" Drill Pipe Float is made with a straight bore body and contains a simple Valve Assembly constructed entirely without threads, which is *dropped into place by hand* and held securely by the tool joint pin above it. When an unrestricted fluid passage is desired, the Valve assembly can be quickly and easily removed from the Float Body.

POSITIVE ACTING BACK-PRESSURE VALVE

At the slightest reversal of pressure, the Valve, with its recessed oil resistant Seal, instantly seats against the Valve Seat, creating a positive, leakproof seal. The two oil resistant Side Seals act against the Float Body to likewise form a positive seal.

The efficiency of the Baker Bakwik Drill Pipe Float has been proved in thousands of wells in oil fields throughout the world and is considered standard equipment where a positive back-pressure valve in the drilling string is desired.

THE BAKER BAKWIK DRILL PIPE FLOAT AFFORDS THESE IMPORTANT ADVANTAGES

1. It prevents plugging the bit.
2. It eliminates the annoyance of pulling wet strings.
3. It relieves weight on the derrick and rig equipment as well as on the lines and draw works.
4. It lengthens the life of wire lines and brake bands.
5. It minimizes — often prevents entirely — serious damage in the event the drilling string should part.
6. It prevents blow-outs through the drill pipe.

ALSO OF IMPORTANCE . . .

is the fact that the Baker Bakwik Drill Pipe Float can easily be placed at any position in the drilling string; that the unit is designed for long life; that the Valve Assembly can be quickly and easily serviced on the rig floor; and that replacement parts can be secured at practically any Supply Store or Baker Warehouse.

VALVE ASSEMBLY QUICKLY AND EASILY SERVICED

Replacement of the Valve Seal is ordinarily the only servicing required during the normal operation of the Baker Bakwik Drill Pipe Float Valve Assembly . . . and this operation can be quickly accomplished in the four easy steps illustrated. When it is necessary to replace the Side Seals, new ones can be installed with equal ease.

Step 1

Step 2

Step 3

Step 4

STRONG, SAFE VALVE ASSEMBLY CONSTRUCTION

Bakwik Drill Pipe Float Valve Assemblies are constructed of a minimum number of essential parts, each designed to give long, satisfactory service. The Cage is made of tough, abrasion-resistant steel, and the unrestricted opening through it is approximately the same area as the fluid passage through the tool joints. The Valve is made of special alloy iron cast integral with the steel stem. Both Valve and Valve Seat are ground to a perfect fit. The Valve Cage is constructed of close grained grey iron, carefully machined for accuracy. The Valve Spring is designed to perform long, efficient service. The two Side Seals and one Valve Seal are made of oil resistant packing, and afford maximum wear under all operating conditions.

Showing Bakwik Drill Pipe Float (complete with Valve Assembly) positioned in drilling string.

BAKER OIL TOOLS, INC.

MAIN OFFICE AND FACTORY: 6000 South Boyle Avenue, Box 127, Vernon Station, Los Angeles, California

CENTRAL DIVISION OFFICE & FACTORY: 6023 Navigation Blvd., Box 3040 Houston, Texas

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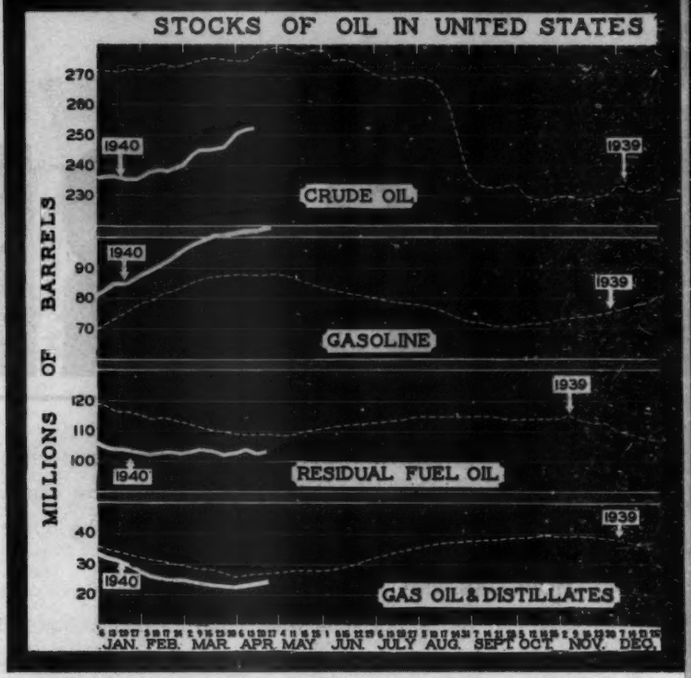
Trends

Several Important Developments May Affect Oil Market



MARKETS for crude oil and refinery products are marking time, awaiting several developments of importance to petroleum supply and demand. Crude-oil production is being maintained at levels which, if continued to the end of the month, assure a record output for the 30-day period, with at least 5 per cent of the production going to storage. While gasoline stocks are leveling off, price trends in this product extending from the refineries through the wholesale and retail stations are still not encouraging, with more indications of weakness than strength.

CRUDE PRODUCTION *3,867,905 bbl. daily average—down 3,734 bbl. One year ago 3,522,956 bbl.*

CRUDE STOCKS *252,269,000 bbl. as of April 13—up 372,000 bbl. One year ago 275,857,000 bbl.*

GASOLINE STOCKS *102,817,000 bbl. as of April 20—up 980,000 bbl. One year ago 87,381,000 bbl.*

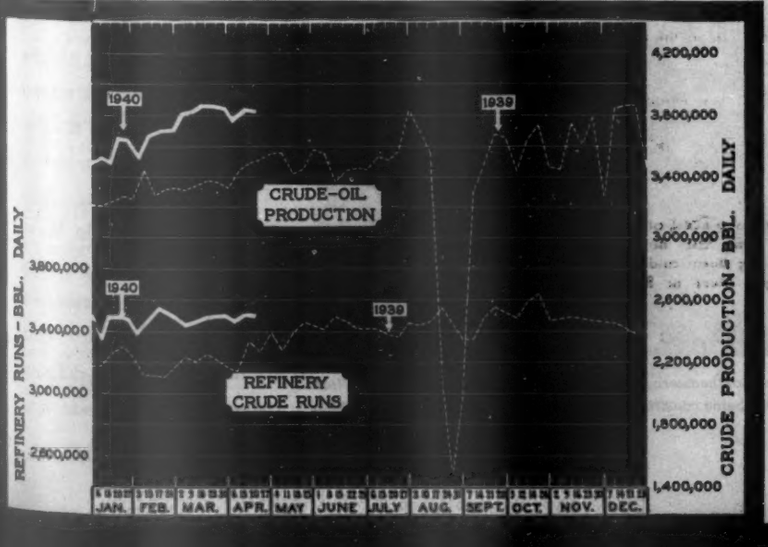
RESIDUAL FUEL-OIL STOCKS *103,323,000 bbl. as of April 20—up 728,000 bbl. One year ago 109,136,000 bbl.*

GAS OIL AND DISTILLATES *24,779,000 bbl. as of April 20—up 542,000. One year ago 26,261,000 bbl.*

REFINERY RUNS *3,535,000 bbl. daily week ended April 20—down 35,000 bbl. One year ago 3,280,000 bbl.*

Note: Gasoline stocks for week ended April 6, published as 101,690,000 bbl., were revised to 101,949,000.

The Bureau of Mines has projected crude-oil demands for May which, if accepted by the state proration bodies, will bring substantial reductions in production starting next Wednesday. The daily average crude-oil production of the principal oil states last week exceeded the B. of M. estimated daily demand for May as follows: Texas, 166,186 bbl.; California, 18,900; Oklahoma, 12,575; Illinois, 40,116; Louisiana, 23,310; Kansas, 2,700; New Mexico, 11,110, and Arkansas, 5,755. These data show that excess production has been general and they also reveal that the principal burden of downward adjustment for next month will devolve on Texas with Louisiana second.



Texas took an important step in the right direction Tuesday with the announcement that its May allowable would be 10 per cent under April, a reduction of approximately 152,000 bbl. daily.

Illinois' crude-oil production probably will continue around present levels for several weeks. The crude market in that area is gradually tightening, due to enlarged outlets. Water shipments to Canadian buyers from pipeline terminals on the Great Lakes have started, and it is estimated that this movement will total around 20,000 bbl. daily in the near future. This method of shipment to Canada has increased in attractiveness owing to the high tanker rates from the Gulf Coast. The expanded Canadian demand and the seasonal increase in this country, coupled with the leveling off of production, are eliminating sources of supply under posted prices in Illinois. Several small refiners are unable to purchase their requirements. It is predicted that as a result of this situation crude-oil shipments to middle western refineries from Oklahoma and Kansas will increase the last half of the year.

There has been no improvement in the tanker situation for coastwise and export movement and rates continue high. How incongruous this situation has become as regards markets is indicated in a report of the past week showing coastwise tanker rate of 85 cents a barrel for natural gasoline, which is now selling for 50 cents a barrel at Texas plants.

DAILY AVERAGE PRODUCTION FOR WEEK

	Apr. 20, 1940	Bur. Mines Apr. est. of demand	Apr. state allowable	Apr. 13, 1940
Oklahoma City	100,300	.....	.....	90,750
Seminole field	38,325	.....	.....	39,375
Remainder of state	282,050	.....	.....	282,175
Total Oklahoma	420,675	413,000	413,000	412,300
East Texas	396,697	.....	.....	396,939
West Texas	280,800	.....	.....	282,084
North Central Texas	140,200	.....	.....	131,550
Texas Panhandle	76,786	.....	.....	81,305
East Central Texas	86,760	.....	.....	87,956
Gulf Coast Texas	412,691	.....	.....	401,853
Southwest Texas	116,452	.....	.....	112,796
Total Texas	1,510,386	1,332,000	1,513,921	1,494,483
North Louisiana	69,110	.....	.....	69,335
Gulf Coast Louisiana	218,700	.....	.....	217,297
Total Louisiana	287,810	257,000	284,133	286,632
California	611,500	590,000	592,000	635,150
Kansas	160,900	151,000	151,000	176,400
Arkansas	70,255	64,500	70,000	68,930
Mississippi	6,250	3,900	.....	7,650
Eastern fields	106,100	109,300	.....	108,000
Illinois	433,116	380,000	.....	421,754
Michigan	62,413	63,000	.....	62,130
New Mexico	115,010	100,000	114,000	113,670
Rocky Mountain area	83,490	86,300	.....	84,540
Total United States	3,867,905	3,550,000	.....	3,871,639

SPARKS . . . FROM THE NEWS

INEVITABLE: The fact that results in several recent wildcat tests at shallow depths have been disappointing may explain why plans are under way to drill two 10,000-ft. tests in the Illinois basin.

MORE GAS: Michigan's 1940 license tags are 30 per cent larger than last year's. Someone with a yen for figures has estimated that it will cost each motorist in the state 50 cents more in gasoline due to the added wind resistance.

PUBLIC TROUGH: Nearly three and three-quarter million persons are now on the public payrolls—federal, state and county. This should be of interest to the oil industry with the highest tax payments.

DUAL PURPOSE: An eastern refining organization explains its decision to install a catalytic cracking unit was motivated by a desire to not only improve quality of gasoline but also strengthen its heating-oil position.

CAUSE AND EFFECT: The results of new exploration methods, deeper drilling, recycling and modern manufacturing practices are revealed in this annual issue featuring the Texas and Louisiana Gulf Coast.

MORE SHUFFLING: The Scandinavian war development apparently is to result in another shuffling of oil-tanker registrations and ownerships. Gulf Coast operators hope the change will result in their seeing more boats at their terminals for the coastwise and export movement of crude oil and products.

MORE TALK: Southern Oklahoma operators, already in a dither over the discovery of the Cumberland pool in Marshall County, were given something else to be enthusiastic over when a second well in the county suddenly showed oil just as operators were preparing to drill deeper.

FEVER: Drilling fever continues to spread in Kansas, more than 50 new wells being started the past week, with new wildcats listed in seven counties.

WELL RATIOS: New Mexico operators are taking steps to correct their well ratios, in anticipation of the testing program the state's Conservation Commission is undertaking in connection with its effort to set equitable, efficient ratios for individual fields.

NEW YARDSTICK: Not only the oil business but all industry is now awaiting the United States Supreme Court decision in the Madison case, assuming that it will give this revamped court's yardstick for conducting competitive enterprise under the anti-trust acts.

HURDLE CLEARED: A pipe line, now marching through Georgia, has won one victory, and is hopeful of another. The courts have decreed that the state Highway Board may grant permission to cross under state highways. All that remains is the railroads' consent to cross rights-of-way.

LESS OIL: An estimated $14,000,000 loss in 2 years, and a potential loss of $50,000,000 a year, has been caused the industry, a speaker averred last week, due to the automobile manufacturers' changes in recommendations of motor-oil changes. The speaker pleaded for "cooperation."

IMPORTANT MEETING: Later developments may show that the most important oil meeting of the spring was held Monday at Chicago where oil marketers gathered to discuss their mutual problems.

HOPING: Gasoline stocks in the week ended April 13 revealed a long-awaited recession; but as increases in the East Coast and Middle West areas exceeded the shrinkage in the nation's total, the industry can only hope till a definite trend is established.

DIFFICULT TERRAIN ALONG NEW PIPE-LINE ROUTE . . .

Laying pipe through Florida swamps for Southeastern Pipe Line Co.'s 450-mile gasoline line from the Gulf Coast to Tennessee, which is now being constructed. The project is described on pages 54-55

Gulf Coast Expanding All Operative Phases

Sun Oil Co.'s No. 2 State well, Sea Breeze, Tex., drilling out into the Gulf of Mexico from the same location where No. 1 State well was completed

The Gulf Coast in Review

EXPLORATION . . .

Steady search for new structures includes anticlinal and sand lenses along salt domes; prospecting for new areas around structures and salt domes already known to be productive and drilling to greater depths. There are 57 known salt domes in Texas, 47 in Louisiana. Seventy-seven of these domes are producing oil from one or more sands. Prospecting in the area includes the seismograph, magnetic, torsion balance, and soil-analysis surveys, aerial photographing of the physiographic features and geochemical well logging.

DRILLING . . .

There are 432 rigs running, 135 in the upper Gulf Coast of Texas, 140 in the lower Gulf Coast of Texas and 157 in coastal Louisiana. Ten new fields had been discovered this year up to April 1, and 44 in 1939. Drilling, which so far this year has been greater than last year, is carried on at lower depths than any other area in the United States. The Fohs Oil Co. No. 1 Buckley and Bourg, producing at 13,333 ft., is the deepest producing well in the world. There are 126 wells producing from depths greater than 10,000 ft. with seven below 11,000 ft. To date there have been 349 deep wells (below 10,000 ft.) drilled in the Gulf Coast and 175 of these were drilled in 1939 and 74 were drilled this year. Ninety-five wells in the area have been drilled below 11,000 ft. and so far this year there have been 25 wells drilled beyond 12,000 ft. There are 26 fields producing from below 10,000 ft. and 12 of these were discovered last year.

PRODUCTION . . .

At present there are over 13,500 wells producing the 625,000 bbl. of oil daily. These wells are located in 312 fields, ranging in depth from 800 ft. to 13,333 ft. In the upper Gulf Coast of Texas there are 118 fields, with 7,758 wells producing 250,000 bbl. daily; in the lower Gulf Coast there are 118 fields with 3,935 wells producing 165,000 bbl. daily and in coastal Louisiana there are 89 fields with 1,828 wells producing 210,000 bbl. daily. Several of the coastal fields have had large recoveries, with three of them already credited with producing over 100,000,000 bbl. of oil each. During 1939, 44 fields were discovered in the area, and, up to the end of March this year, there were 10 new fields discovered, 6 in coastal Louisiana and the remainder in the Texas area. Three of the Louisiana discoveries were below 10,000 ft. Discoveries in 1939 were exceeded only by 1938, and this year gives indications of surpassing last year. There are about 40 fields under active development in coastal Louisiana, with all operations orderly and well planned.

NATURAL GASOLINE AND RECYCLING . . .

The natural gasoline and recycling plants produce approximately 750,000 gal. daily in processing 1,150,000,000 cu. ft. of gas daily. It is the home of the largest recycling plant with a capacity of 130,000,000 cu. ft. daily. There are 12 other recycling plants in operation and two building. The present production of natural-gasoline plants is 425,000 bbl. daily.

REFINING . . .

Forty-five refineries constitute the world's largest refining center. With a refining capacity in excess of 1¼ million barrels daily, the plants are now refining approximately 1,100,000 bbl. of crude oil daily, or 30.5 per cent of the total in the United States. They produce 28.5 per cent of the gasoline; 30.5 per cent of the lubricating oils; 40 per cent of the kerosene; 42.4 per cent of the gas oil and distillates, and 25.5 per cent of the petroleum wax. Approximately two-thirds of the refinery output is shipped to Atlantic Coast points and 175,000 bbl. daily is exported. Twenty-five major pipeline systems and smaller lines deliver the crude to the refineries and shipping terminals. The crude delivered includes practically all the grades available from Mid-Continent and Gulf Coast pools.

GULF COAST FEATURES

A complete account of operations in the Gulf Coast area will be found in a special section starting on Page 71

Southeastern Pipe Li
Florida-Georgia Ga

By PAUL REED

In the course of laying this 450-mile pipe line which is now under construction from the Florida Gulf Coast to the Tennessee line, a variety of conditions has been presented in traversing of swamps, orchard country and mountains. Furthermore, there have been many delays due to difficulties in obtaining permits to cross railroads

ATLANTA, Ga., Apr. 20.—The most important pipe-line project under construction at the present time is the 450-mile gasoline line of Southeastern Pipe Line Co. from Port St. Joe, Fla., across Georgia to the Tennessee State line near Chattanooga. From the coast to Atlanta, the line will consist of 340 miles of 8-in. pipe; 110 miles of 6-in. pipe will be laid from Atlanta north. This pipe line will operate as a common carrier.

Williams Brothers Corp. is handling all phases of the construction, including the making of surveys, buying of right-of-way, stringing, welding, coating, as well as laying operations. Pipe is furnished by the pipe-line company. This is regarded as the largest turn-key job of its kind undertaken in recent years.

Because of the opposition of southern railroads it has been necessary to omit the making of numerous railroad and highway crossings. The issues involved in the multiple litigation were reviewed in an article in The Oil and Gas Journal in the issue of April 4. The question raised will be settled in court decisions which are expected to be handed down in the next few weeks. The testimony in favor of the line presented at recent hearing, by people from all parts of Georgia, indicates widespread approval of the project. Since the granting of permission to cross rights-of-way is an established modern practice elsewhere in the United States and foreign countries, it appears inevitable that these permits will be issued.

Terminals

The line will have a maximum capacity of 600 bbl. per hour. Products handled are to be shipped by tanker to the marine terminal at Port St. Joe, Fla., which has an adequate harbor, now serving fishing operations and a paper mill built in recent years by Du Pont interests. Terminals are to be located along the line in Georgia near Bainbridge, Albany, Americus, Macon, Griffin, Atlanta, Rome, and Lookout Mountain.

Terrain

Terrain traversed by the line consists of 25 miles of swamps immediately north of Port St. Joe. Between the swamps and Atlanta, the ground is gently rolling with numerous large peach and pecan orchards which require special care in pipe lining to minimize the use of equipment on the right-of-way in order to avoid damage to the trees. The 100-mile stretch between Atlanta and the Tennessee line is rocky country. The line crosses the Blue Ridge to the south edge of Lookout Mountain, near Chattanooga. The first survey party commenced work November 10. Considerable use has been made of aerial photographs taken by the U. S. Department of Agriculture in connection with soil-survey operations.

Transportation of Pipe

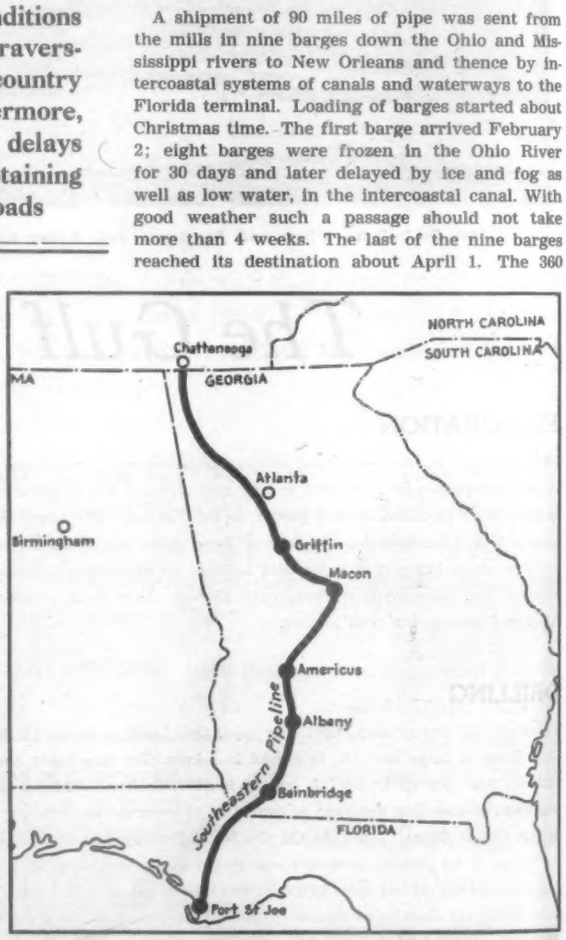
The pipe consists of 340 miles of 8-in., 29-lb., for the part of the line from the coast to Atlanta, and 110 miles of 6-in., 19-lb., for the remainder of the line north of that city. Pipe came in 44-ft. random lengths, both ends of which have been covered with tin caps which preserve the beveled ends and helped to keep the inside of the pipe clean, thus reducing the time required for swabbing. A continuous stretch of 25 miles in Florida swamps was cleaned, primed, coated with enamel and wrapped with asbestos felt. The rest of the pipe is being coated and wrapped only in the low spots, which represent about 10 per cent of the line.

A shipment of 90 miles of pipe was sent from the mills in nine barges down the Ohio and Mississippi rivers to New Orleans and thence by intercoastal systems of canals and waterways to the Florida terminal. Loading of barges started about Christmas time. The first barge arrived February 2; eight barges were frozen in the Ohio River for 30 days and later delayed by ice and fog as well as low water, in the intercoastal canal. With good weather such a passage should not take more than 4 weeks. The last of the nine barges reached its destination about April 1. The 360

Right: Map showing route and terminals of the Southeastern Pipe Line Co.'s new line

Below: Guy S. Connors, vice president, Williams Brothers Corp.

Bottom: Views showing boom tractors handling pipe over favorable ground and swampy country



Line Co. Building Gasoline Line

miles of pipe shipped by rail were unloaded and racked in 22 days, which is record time for an operation of this size.

Construction Operations

Construction work commenced shortly after January 1, and would have been completed in 60 days with five gangs if the railroads had not impeded progress by denying permission to make crossings. The first work was started by a gang working north from the Georgia and Florida state line. Later a gang of the usual size built the Florida section of the line.

Each of the two main gangs is equipped with two ditching machines, three boom tractors, four stringing trucks, one tow tractor, two tractors with the pipe gang, one of which is equipped with an angle dozer, one angle-dozer tractor to backfill, and 12 welding machines. Two of the welding machines are engaged in tacking; nine welding machines are used for making the stringer beads in completing the bell-hole welds; there is one utility welding machine with each gang. For the first bead a 5/32-in. rod is used; for the last two beads a $\frac{1}{8}$-in. rod. The tractor, with the pipe gang, which is equipped with an angle dozer, can be used in backfilling at road crossings.

The ditch is 24 in. wide with 24 to 30 in. of cover. Rooters proved to be valuable in breaking ground ahead of ditching machines in Williams Brothers' Wyoming operations last summer but rooters have not been used as yet on the Southeastern line because the ground encountered so far is soft. Rooters will be used in the rocky country north of Atlanta. About 10 tons of powder have been used for clearing the right-of-way of stumps; altogether about 25 tons will be used on the project. For moving ditching machines from one part of the line to another the Williams Brothers organization has used a low platform trailer which has been specially built for this purpose. One drag line with boom was used at river and canal crossings.

Stovepiping Largely Used

The method used for laying most of the line is stovepiping, the merits of which have been clearly demonstrated in recent operations. Where difficult swampy ground is encountered sections of pipe are made up and pulled across, some of these being as long as 1,200 ft. In crossing peach and pecan orchards sections as long as 2,000 ft. have been pulled along the right-of-way. At the end of each day a swab is run through the part of the line which has been welded in order to clear it of dirt. All bends are cold bends made with tractors.

In constructing the line through Florida swamps, practices common to the Gulf Coast have been adopted. Pipe was snaked from trucks on the highway by steel cables pulled by tractor winches. In soft ground of this kind it is not possible to use trucks on the right-of-way. All welding and painting equipment was mounted on sleds. An unusual practice was the equipping of ditching machines with 4-ft. treads for swamp work. Tractors were equipped with extra wide cleats for this type of service.

Unusually fast time has been made in laying certain parts of the line. In one day 4 miles were laid in Georgia. The average time has been 2 miles per day. When the project is completed the gang laying from the Florida line to Atlanta will have laid 275 miles, which is probably a record for one gang on any line.

With the completion of this project, the people of Georgia and vicinity will enjoy the same advantages and economy of distribution which are now available in every oil-producing state.

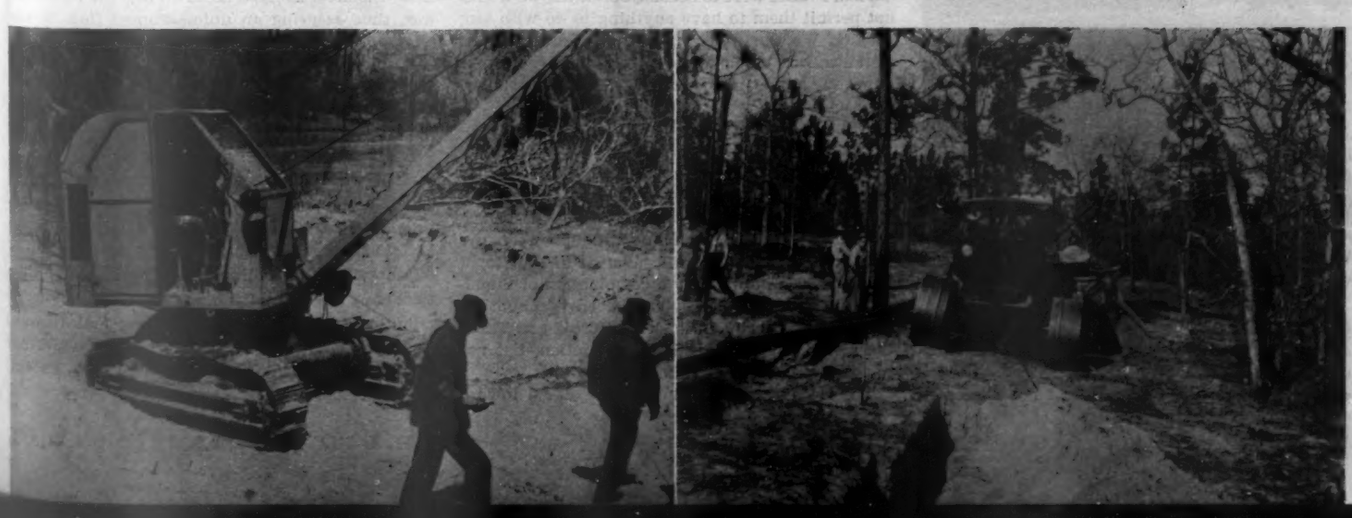
●

Permit Granted to Cross County Highways

ATLANTA, Ga., Apr. 22.—Southeastern Pipe Line Co., owned jointly by Gulf Oil Corp. and Pure Oil Co., has been granted permission by the Board of Commissioners of Henry County, Georgia. to lay pipe under and cross county roads in the county. Decatur, Baker, and Crawford county boards in Georgia have adopted resolutions similar to those passed in Henry County. A recent court decision frees the state Highway Board of restrictions and enables it to grant permits to cross under state highways.

Below: (Left) Bending pipe with tractor. (Right) Welding equipment transported on sleds over swampy ground in Florida

Below: (Left) Guy S. Connors, at right, and drag line at river crossing. (Right) Ditcher operating in Florida



War and Oil

Allies Will Probably Keep Norwegian Tankers Busy

By H. STANLEY NORMAN

NEW YORK, Apr. 22.—Confusion in the international petroleum industry following the invasion of Denmark and Norway, particularly with respect to tankers operating under flags of the two Scandinavian countries, was clearing at the end of last week.

Developments during the past week indicate that Norwegian flag tankers will be maintained in nearly normal service under protection of the Allies. It was reported, but not definitely confirmed, that tankers of Norwegian registry will be permitted to operate between British ports, between French ports or between British and French ports subject to convoy and temporarily, at least, under armed supervision. It was assumed that at least the bulk of the Norwegian crews will be replaced with British or French nationals as soon as boats reach those countries.

Prior to the invasion of Norway it was reported in the current issue of International Petroleum Trade, published by U. S. Department of Commerce, that Great Britain had chartered a total of 150 Norwegian tankers. Assuming that this report, which came from the Journal des Petroles of Brussels and the Journal de la Marine Marchande of Paris, was correct it would leave approximately 110 Norwegian flag boats not under Allied direct domination.

Several large American oil companies operate tankers under the Norwegian flag. Many of the Norwegian boats are owned outright, while others are pledged under long-term charter or held through subsidiary and affiliated companies of one sort or another with domiciles outside the United States. The second Norwegian tanker to arrive in New York within a week camouflaged a mud-gray color was the American-operated vessel Brazil. The boat reached New York Friday having completed a voyage from Port Arthur, Tex. It was reported that as soon as her camouflage job is completed, she will sail for Europe, picking up a British convoy probably at Halifax.

Although the Danish tanker fleet is small in comparison to that of Norwegian registry, boats of the former nationality have been placed in a different classification by the British Ministry of Shipping. Danish boats must change their registry to one of the Allied nations and accept instructions from either France or Great Britain if they wish to avoid the risk of capture or sinking. Most boats of Danish registry sought neutral ports as soon as Germany invaded Denmark. The Allies have taken the attitude that Danish vessels are in the category of belligerent ships unless application is made, before leaving neutral sanctuary, for protection under the British or French flags. A committee representing Danish boat owners has been considering the problems involved in New York and has so far taken the attitude that, since German occupancy of Denmark occurred only after the strongest possible protest, they should be permitted to operate under flags of neutral countries. This the British have so far denied and consequently the issue remains clouded. Observers feel that eventually the Danish boats will be placed under either British or French flags and will be devoted to serving the Allied petroleum requirements.

If Danish and practically all Norwegian boats are placed under direct supervision of the Allies, observers see a possible increase in the movement of petroleum from the United States to Europe. It is still possible, under the neutrality regulations, for American flag boats to discharge cargoes at Halifax or similar British or French ports outside the zones of combat from where they may be transshipped into belligerent waters in Europe.

Here is an ingenious attempt at solving England's gasoline-rationing problem. The huge bag atop the truck contains gas which is the truck's motive fuel. A bagful of gas gives about same mileage as 2 gal. of gasoline

Japan Eyes Netherland East Indies

MEANWHILE, the European war possibilities cast their shadow over another important source of international oil supplies in an inference that Japan might seek a protectorate over the Netherland East Indies in the event of an invasion of Holland. So far as the U. S. Government is concerned the implication from Tokio that occupation of Holland would be a signal to take over commercial control of the Netherland East Indies caused more apparent concern than the invasion of Denmark and Norway. Secretary of State Hull lost no time in notifying Japan that any change in the status quo of the Pacific would be considered an unfriendly act.

Meanwhile, a high government official of the Netherlands was quoted by the International News Service as saying:

"Even if we are invaded by Germany, and Britain and France were to become our allies, we would not permit them to have anything to do with our islands. We would help them fight Germany, but we always make our own decisions on where and how. We would not permit the British to inject themselves into the East Indies."

While the Netherland East Indies supply substantial quantities of other commodities such as rubber and tin to world markets, their petroleum reserves are the chief point at issue. Last year the Netherland East Indies produced upwards of 60,000,000 bbl. of oil. So far, all production on the islands is controlled by subsidiaries of the Royal Dutch-Shell group and by a combination of Standard Oil Co. of New Jersey and Socony-Vacuum Oil Co., Inc. Standard Oil Co. of California and Texas Co. are jointly interested in exploration, but not in actual producing or refining operations.

The state of siege declared by Holland toward the end of last week, obviously proclaimed to retard any action against the country's colonial possessions, will have no immediate practical bearing on the petroleum operations either in the East or West Indies, so far as could be learned in New York. Under the state of siege it is probable even less data on operations will be available. At the two large refineries operated by Shell interests and Standard of New Jersey in the Netherland West Indies, 400,000 bbl. of Venezuela oil daily are converted into refined products. Approximately 300,000 bbl. daily of this supply eventually reaches Europe, distributed between belligerent and neutral countries.

Since the Netherland West Indies are located well within the scope of the Monroe Doctrine, the impression is gaining that the United States will establish some form of temporary protection over those islands if Holland is drawn into the European war, thus assuring an uninterrupted flow of the oil supply which actually originates in Venezuela and Colombia.

In the case of the Netherland East Indies the issues are less clearly defined. It is uncertain just how far Washington will go in sustaining the position taken by Secretary Hull last week; it is uncertain whether Japan would take its intended action after expression of the United States attitude. Further, it is not clear just how far Great Britain is prepared to go to prevent the East Indies' oil supplies from falling under Japanese domination. Any revision of the present channels of distribution from the Netherland East Indies would seriously hamper British positions in the Near East, where the Allies have between 500,000 and 750,000 troops.

N. H. Weber, president, National Petroleum Association, and vice president Pure Oil Co., Chicago

By J. P. O'DONNELL

Trends in Motor Fuel And Oil Concern N.P.A. Meeting

CLEVELAND, Ohio, Apr. 19.—Criticism of Washington oil and labor policies featured the thirty-seventh semiannual meeting of the National Petroleum Association here, at which Gov. Carl E. Bailey, of Arkansas, delivered the principal address which is reported in part on Page 59.

N. H. Weber, president of the association and vice president of Pure Oil Co., after stating that "the employer has no standing in the National Labor Relations Act; he is given no liberty but is throttled with a mass of prohibitions," expressed the belief that "it seems with the number of congressional objectors there will be changes in the act that will insure more fairness for industry and a healthy change in its administration. However that may be, we can be assured we will have a labor act."

Since some labor act will remain, he urged a plan of company education. "Where there is a considerable number of employes there always will be found a few malcontents or that class who are never satisfied. But the majority are always amenable to education and understanding, especially when it concerns the company from which they receive payment for their labor and when they are made to feel they are a part of that company and are recognized as such."

Motor-car manufacturers' recommendations of deferred motor-oil changes hold "ominous warnings for the car owner, the car manufacturer and for the oil industry particularly," J. M. Koch, director, sales and advertising, Quaker State Oil Refining Corp., said. Because mechanical troubles have developed solely and simply from improper attention to lubrication, "the automobile industry is doing a distinct disservice, both to its customers and itself, by recommending a spreading out of drainage periods."

Calling on the automotive industry for cooperation, he said, "The motor car is the largest single investment the average family makes. We have a positive duty to the American public to help them protect that investment and we have the right to expect the utmost cooperation from the automobile industry in performing this service." In a paragraph admittedly devoted to the "selfish angle," Mr. Koch said, "In the last 2 years alone the loss of business to us, due to stretching out the drainage period, has been more than $14,000,000. If the present trend continues we can lose a volume up to $50,000,000 a year."

Lubrication Committee Objectives

Tentative objectives of the A.P.I. lubrication committee were listed by R. A. Ludlow, director of the committee, as: (1) To inform motor-car owners of good practices in the use of lubricants; (2) to foster sound policies in the merchandising of quality lubricants; (3) to promote the study of arts and sciences of lubrication; (4) to promote in general the interests of all connected with the manufacture, distribution and servicing of lubricants.

Importance of the committee's program to the oil industry is shown by the fact that average drain intervals increased from 1,547 miles in 1936 to 1,772 miles in 1938 and, if the trend continues, will reach 2,250 miles in 1942, Mr. Ludlow pointed out. "Our plan is to insure the motorist of the safe, satisfactory functioning of his car," he said. "It is a plan to assure the car manufacturer that his customers will enjoy satisfactory use of the car he sells. We know it has at heart the interests of the motoring public and that lubrication service can and should play an important part in keeping the car owner satisfied with his investment."

The only possible answer to the question, What will the octane requirement of future cars be? is that it will be "the octane number of the normal, regular-grade gasoline that is generally available all over the country when the new model makes its appearance," J. B. McCauley, of Chrysler Corp., said in discussing "The Octane Problem From the Automotive Viewpoint." A few models, he said, will call for premium-grade fuel but these constitute only a small proportion of total car production.

Answers to the questions, What octane gasoline does the automotive engineer desire? and Is there, from an automotive standpoint, an upper limit to octane number? lie in the future, he said. "The automotive engineer would like to have an absolutely knock-free fuel. He is not likely to get it, but if he had it he would keep on doing what he is doing now, that is, to exploit its properties to provide better and cheaper transportation." Prospects for future developments in the utilization of high-octane gasoline include higher compression ratios and the use of supercharging, he said.

Mr. McCauley's paper was discussed by J. B. Fisher, of Kendall Refining Co., Bradford, who said the octane race is the responsibility of the oil industry because of steadily narrowing the

FEATURES OF N. P. A. CONVENTION

Vigorous address by Gov. Carl E. Bailey, of Arkansas

Pres. N. H. Weber's criticism of labor legislation

Motor-oil changes and octane fuel discussed

Lubricating-oil symposium

J. M. KOCH

Director, sales and advertising, Quaker State Oil Refining Corp., a speaker at the meeting

range between third-grade and house-brand gasoline; by E. B. McConnell, of Standard Oil Co. of Ohio, Cleveland, who said the octane rise was the greatest in the decade before 1934 and then it resulted from the adoption of new processes, adopted principally because they increased yields and not only because of product improvement, and by W. S. Zehrung, Pennzoil Co., Oil City, who expressed the belief that other characteristics, such as gum, corrosion, etc., should be used in evaluating motor fuel as well as octane number.

Hanson W. Baldwin, military critic of the New York Times, blamed the early complacency of the Allies for German success in acquiring other states.

Prof. Henry M. Busch, of Western Reserve University, Cleveland, expressed belief that Germany is economically prepared for a war of several years. He said Germany may be able to obtain needed oil supplies from Rumania and Russia. Prof. Busch also condemned the Allies' early complacency and emphasized the first part of the statement, "The Allies cannot win a short war and Germany cannot win a long one."

Evidence that addition agents are essential to give lubricating oils satisfactory service characteristics was presented during the lubricating-oil symposium but hope was voiced by some that improved refining methods would achieve the same end. Discussions were led by J. P. Stewart, Socony-Vacuum Oil Co., on aircraft oils; by George A. Round, Socony-Vacuum Oil Co., on automotive lubricants, and by C. G. A. Rosen, Caterpillar Tractor Co., on diesel oils. The consensus was expressed by Mr. Stewart, who said, "We are convinced that the limit has been reached in subtractive refining and recourse must be had to additives to produce any substantial improvement in lubricating oils."

Mr. Weber, president of the association, presided at the first general session and C. L. Suhr, chairman of the board of Pennzoil Co. and executive vice president of the association, at the second. M. C. Mallon, of the National Petroleum Association legal staff, presided during the lubricating-oil symposium. More than 350 oil men attended the meeting.

Speakers Stress Importance Of Additives in Lubricants

CLEVELAND, Ohio, Apr. 19.—Ample evidence that addition agents are essential in today's lubricating oils, at least to give them satisfactory performance characteristics under severe conditions, was presented by speakers who addressed the lubricating-oil symposium held in connection with the thirty-seventh semiannual meeting of the National Petroleum Association here today. Whether the future course will be toward development of additives, or toward new refining methods, was not definitely indicated, since both recourses were supported.

J. P. Stewart, of Socony-Vacuum Oil Co., on aviation oils; C. G. A. Rosen, of Caterpillar Tractor Co., on diesel lubricants, and George A. Round, of Socony-Vacuum Oil Co., on automotive oils, introduced the three phases of the symposium which attracted several hundred oil men. Nearly a score of others participated in the prepared discussion, indicating the interest the subjects held. M. C. Mallon, of the National Petroleum Association, presided.

Improvement in lubricating oils can be accomplished in but two ways, Mr. Stewart said in the opening paper which set the keynote for the symposium. These are "through crude selection and further advances in the refining art or by the addition of chemicals probably foreign to the oil, which will amplify desirable properties inherent in the oil, or which will provide properties which the oil itself does not possess.

"We are convinced that the limit has been reached in subtractive refining and recourse must be had to additives to produce any substantial improvement in lubricating oils. This comment applies to both automotive and aviation oils. . . . When we speak of improvements in oils we refer to improvements in all the characteristics of the oil that affect engine operation, not the overemphasis of one characteristic at the expense of others. In certain instances, the latter can be accomplished by straight refining methods but in our experience the overall performance of such lubricants falls much short of what can be accomplished by additives."

Mr. Stewart cited engine-test results to show (1) a straight mineral aviation oil produced ring sticking in 30 hours, while one with 1 per cent additive prevented sticking over 100 hours; (2) the same additive gave superior oxidation stability; (3) piston lacquer was less at the end of 100 hours' operation on an additive oil than at the end of 30 hours on a straight mineral oil; (4) sludge in the sludge chamber was 36 g. for the straight mineral oil and 17 g. for the additive oil and the latter contained but 1.2 per cent oxymaterial; (5) a ratio of 3 to 1 in the rate of ring wear for the straight mineral oil against the additive oil.

The fact that ring metallurgy may play an important part in ring wear was also cited by Mr. Stewart, who showed the difference in results obtained on rings from different sources operated on the same oil and under the same conditions. He also reported that "very finely finished cylinder surfaces appear to be much more difficult to lubricate than cylinders with a somewhat rougher finish. . . . If these observations on the effect of ring metallurgy and cylinder finish on ring wear are not the result of coincidences they point to certain improvements which the engine builders and suppliers may well make to lighten the load imposed upon the lubricating oil," he concluded.

Additives for Aviation Engines

Albert E. Miller, of Sinclair Refining Co., said that additives are needed for high-output aviation engines. Subtractive refining follows attempts to highly refine an oil and when it is found a straight mineral oil will not do, additives should be used but in as small quantity as possible. It is difficult to find an additive that will effect all desired improvements and then it is necessary to add agents that are compatible and will not react with either the lubricant or the fuel and cause trouble later.

P. M. Robinson, of Pennzoil Co., stressed the need for laboratory tests which will correlate with actual engine tests on account of the great cost of the latter. He expressed the belief that "we have just about reached the peak in subtractive refining and need additives. Solvent and other refining methods are costly and lose oil whereas additives are less expensive. I hope that additives are only a stopgap, for by their use the individual refiner loses the identity of his oil and it goes to the manufacturer of the additive. I still believe it is possible that we will be able to produce an oil through molecular rearrangement or by improved refining technology that will be entirely satisfactory."

Mr. Round, in discussing automotive lubricants, stressed the contention that additives are not "to bring a cure-all" but also held that while the premium oils of years ago were satisfactory then, today "the best you have is not good enough." The automotive manufacturer has been constantly trying to improve his produce and to the oil industry this has been pretty much of a headache both in fuels and lubricants.

The most severe requirements set the standard of quality, he said, and while most oils will perform satisfactorily 95 per cent of the time it is the 5 per cent that is important. Additives were resorted to 5 years ago when the first corrosion problem presented itself and were found to do the job. Since then requirements have been stepped up and further advances are necessary. Mr. Round also showed a number of slides to illustrate the superiority of oils containing addition agents in specific applications.

R. E. Dunham, of Conewango Refining Co., said additives should not be regarded as a panacea and refining processes minimized. He expressed the belief that research on refining-technology improvement is of as great importance as research on additives.

C. W. Georgi, of Quaker State Oil Refining Corp., showed slides of valve covers to demonstrate the effects of different oils and described a method of rating oils on the basis of ring seizure. The best conventionally refined oil had a rating of 80, not too good for heavy-duty service, he said. He showed how additives in solvent-refined Pennsylvania oils raised their rating to the arbitrarily perfect 100. Additives are indispensable for lubricating oils in heavy-duty service, Mr. Georgi said, but must be selected with respect to the base.

Must Be Balanced With Oil

H. C. Mougey, of General Motors Corp., said additives must be balanced with the oil and that their value can be determined only by actual engine tests. He pointed out that oils good in heavy-duty service were equally good in milder applications. He emphasized that no oil will give its best performance in a dirty engine.

W. B. Ross, Pure Oil Co., cited troubles occasioned by improper cooling and said that, regardless of the original quality of the oil, it will deteriorate under hot engine wear. He also stressed the need for tests other than the highly expensive engine tests.

H. M. Rugg, of the Pennsylvania Grade Crude Oil Association, said improved methods of refining still held possibilities. He discussed research on oxidation at Pennsylvania State College which showed that an increase of 10° F. in the operating temperature of an engine increases the absorption of oxygen two and one-half times. This poses the problem for manufacturers of keeping sump temperatures below the critical point, he said.

"The bottleneck of present engine design is lubrication," Mr. Rosen said in discussing diesel lubrication. "New trends in design indicate further heavy requirements on oils and lubrication is to be challenged further." He listed the essentials of a lubricating oil as (1) providing minimum deposition; (2) being noncorrosive to bearings; (3) possessing high film strength; (4) providing resistance to ring sticking; (5) having low cylin-

(Continued on Page 64)

Waste Is Preferable to Fascism, Bailey Warns

Fayette B. Dow, counsel, National Petroleum Association, and Gov. Carl E. Bailey, of Arkansas

By GOV. CARL E. BAILEY
Governor of Arkansas

Gov. Carl E. Bailey, of Arkansas, electrified the semiannual meeting of the National Petroleum Association, at Cleveland, Ohio, April 19, by an address on "Americanism," during which he dramatically declared that waste would be preferable to "the fascist proposal to take the power to regulate production of oil from the people and vest it in a secretary of the interior." High points of his address, which was broadcast over an N.B.C. network, are reported herewith.

THE price for the liberty we enjoy was paid with human lives. Eternal vigilance is the price we must pay to retain it. The practical application of this proverb presents us with the necessity of frequently reinspecting our status. To do this we must review our history, inventory present conditions, frankly admit the measure of our own responsibility for them, and make such contribution as we are capable of making to the accomplishment of a better condition.

Upon doing that in the present situation, we are challenged by the drift of American Government away from constitutional and Democratic ideals. Raw facts must be presented in plain language; and so in my discussion today, I must use plain language, but dispassionately and without rancor.

It is psychologically bad to think or talk in terms of what the federal Government is doing for the people. It is the people's Government, and it is more appropriate, therefore, to think and talk in terms of how the powers of that Government are being used or abused.

If the people had the opportunity to procure for themselves the income which the powers of the federal Government are now being used to make available to some of them, they would undoubtedly prefer to procure it through individual initiative. Red-blooded American people want employment—not charity. Pollution of constitutional processes, not by elected public servants, but by irresponsible appointed beneficiaries of political patronage, unidentified to the public, working behind unmarked doors, stands in the way of that opportunity for the people. The irresponsible bureaucrats have a vested interest in depression. When depression ends, their jobs on public payrolls end likewise. It is said that about 9,000,000 are now without jobs. There is $16,000,000,000 idle cash in the nation which is so afraid of political instability that it cannot be coaxed to go to work creating jobs for the unemployed. . . .

Complete adherence to the Constitution would have brought into existence long ago complete equality of opportunity, just as partial adherence has produced freedom of press, freedom of speech, freedom of assembly, and freedom of religious worship, and would have made adequate security for every citizen available to him. But we do not have equality of opportunity. Hence, millions are without real security. Inequality of opportunity has not occurred because of any failure on the part of sovereign states. It has occurred on the other hand because of national policies which created privilege and protected monopoly. When the basic faults in national policies are corrected—and they will be corrected when national leadership insists upon a simple obedience to the Constitution—the people will have the means with which adequately to support their local units of government. Thus will the need for the use of the federal Government's powers to borrow and tax be ended.

To do this, we need no genius in our national leadership. The charter of our liberties charts a safe course for political leadership of plain integrity and ordinary intelligence. No one person need envision all of the ramifications of American existence. No dictator is needed to assign each individual life a place in the scheme of things. That the Constitution is a safe substitute for the king or the dictator is best demonstrated by the history of humanity during the 153 years since our Constitution was adopted. During this period, there has been more of human progress in all phases of human existence than in all previous recorded history, because under our Constitution, plain citizens have been free to think, to plan, and to initiate. . . .

When an individual finds himself ill and in pain, he expects his doctor to apply drugs for the temporary relief of the pain. While thus relieved from the extremity of present agony, he expects his doctor to diagnose his condition and prescribe treatment for removal of the cause. The quack doctor does not diagnose and prescribe sound treatment. He allows the pain to recur so he can make a drug addict of his patient. Thus every fiber of the patient's self-respect and independence is rotted out, and he pays perpetual tribute to the creature that destroys him. It appears to me that it is the obvious purpose of certain "quack" statesmen in Washington to perpetuate the palliations of economic and social pain for the similar purpose of making of the people of the United States political drug addicts. The outward manifestations of this disposition are to be found in numerous practices and policies of bureaus and agencies of the federal Government and in proposed and newly enacted legislation.

Emboldened by the apparent success which has attended the efforts of certain bureaucrats in charge of some phases of the spending and leading programs to concentrate power and convert American government to a government by the caprices of individuals rather than a government by law, others now are manifesting an ambition to create a dictatorship by sheer fiat of law brought into existence on the basis of utterly false and indefensible premises.

In the face of voluminous evidence to the contrary, it is stated that the oil and gas resources of the nation are being wasted. This, it is said, is inimical to national defense. Thus a bill has been presented to the Congress under the provisions of which the conservation and production of oil and gas would be taken from the people and vested in the secretary of the interior. From his decisions there would be no appeal. This proposal is so fascistic and terrifying that it provoked the personal protests of nine governors of oil-producing states before the committee holding hearings on the bill in Washington. Oil and gas affect the lives of every one of the 130,000,000 human beings who constitute the people of the United States. Thus, one man given control of the conservation and production of oil would be indeed a dictator.

Even if oil and gas were being wasted by the choice of the people, I contend that no man and no one group of men have any right to proceed any further than to attempt to educate and persuade the people not to commit such waste. It would be better for the oil and gas resources of the nation to be wasted than for our form of government to be changed so as to give control of the people and their destinies into the hands of bureaucrats and quack statesmen. . . .

I decry ruthless individualism. I glorify individual initiative and freedom of thought and action. I want my Government to give the individual a chance. I want my Government to give business a chance. I want no nazlism, fascism, nor communism. Call my political attitude what you will. I learned it from Washington, Jefferson, Jackson, and Lincoln, through the Declaration of Independence and the Constitution of the United States. It is symbolized by the Stars and Stripes—the red, white, and blue. It is my heritage, my birthright, and yours, and I insist it shall not be polluted by an irresponsible bureaucracy or swapped for a mess of pottage. I call it Americanism!

STATE CAPITALS...

OKLAHOMA

PRODUCERS AND PURCHASERS will meet on April 26 with W. J. Armstrong, conservation officer of the Oklahoma Corporation Commission, at which time the allowable production in the state will be discussed. The commission may set the allowable for 3 months, May, June and July, based on the Bureau of Mines estimates of demand.

TEXAS

THE RAILROAD COMMISSION Tuesday ordered a 10 per cent reduction in May allowable production, a drop of 152,000 bbl. daily. The allowable in East Texas is 385,000 bbl. There will be 14 shutdown days in East Texas in May against 12 in April.

Most operators agreed at the state-wide hearing last week with the members of the commission that Texas production should be cut back; some asked for increases in certain fields that produce low-gravity crudes; crudes used for low cold-test lubricating oils, and crude for export to "countries we want to have it," as Henderson Coquat, of Republic Oil Co., phrased it.

The Bureau of Mines estimate of demand for Texas crude in May is 1,344,200 bbl. per day. For April it was 1,332,000 bbl. per day.

Commissioner Ernest O. Thompson again recommended that May allowable production be made the same as the Bureau of Mines estimate, as had been proposed by the Interstate Oil Compact Commission. Commissioner Sadler considers the bureau's estimate of demand too low and favored actual demand of refiners made to the commission as the proper allowable for May. Chairman Lon A. Smith was not present at the session owing to a recent illness, but he had already given it as his opinion that the commission should stay inside the bureau's demand figures in June, July, and August, but not in May. Commissioner Sadler also favored waiting until June, July, and August.

State Sen. Clint Small, of Amarillo, speaking for the Independent Oil Producers Equity Association, favored conforming with the federal forecast, because for the past 5 weeks stocks of Texas oil increased, along with a rise in gasoline stocks. Correctness of the bureau's estimate has been demonstrated by the gain in storage when the allowable exceeded it, he said.

Charles F. Roeser, of Fort Worth, former president of the Independent Petroleum Association of America, joined in asking the reduction, saying that 5,500,000 bbl. of crude had been added to Texas storage since January 1. He said that 3,500,000 bbl. came between March and April 6.

His figures revealed that the state was producing 162,000 bbl. daily too much oil to obtain a balance. He also pointed out that because of the latest Nazi efforts in Norway and Denmark that the export trade would be further cut and that the high tanker rate also was hurting Texas.

From a standpoint of storage, he said that Texas is a worse offender than Illinois, and asserted that he felt positive that there will be a price cut unless something is done about the oversupply.

R. H. Foster, of the Landreth Production Co., of Fort Worth, said that storage was nearing the danger line. He also presented engineering data on West Texas, which he said should be compiled on other districts in order to make proper adjustments and eliminate inequities. When an equitable basis is reached, he recommended that the entire state be given a horizontal cut from 10 to 15 per cent.

Raymond Buck, of Fort Worth, representing the Barnsdall Pipe Co. in Placedo, McFadden, Keeran, and Heyser pools of Southwest Texas, asserted that the low-gravity crude from the first two areas is needed badly and higher-gravity crude from the latter two is insufficient to meet demands.

Raises for Plymouth, East White Point, Benavides, and Longhorn pools were asked by Henderson Coquat for the Republic Production Co.

Requests for more West Texas crude from P. O. Settle, Fort Worth, of the Gulf Oil Corp., who said that the firm now was running 49,000 bbl. daily and needs 60,000 bbl. In reply, O. D. Crites, of Shell Pipe Line Co., announced that plans now are under way to give the Gulf connections to 6,000 bbl. daily in the Cummings-Goldsmith pool of Ector County.

J. A. Rauhut, representing the Amerada Petroleum Corp., asked that the allowable of the Seminole pool of Gaines County be lifted from its present figure of 32 bbl. daily to 58 bbl. per well.

E. D. Warner sought an increase for his Chapman lease in the Panhandle, while other such requests came from Joe Hill, Conroe; Marion Church, Talco; J. K. Brim, Sulphur Bluff; Fred Hyer, Wheat pool; C. W. Hoffman, Emperor pool; Ira Butler, Cummings-Goldsmith; R. Van A. Mills, Conoco, Driscoll.

J. C. Anderson, member of the firm of Anderson-Prichard Oil Corp., of Oklahoma City, Okla., brought the Wasson pool of Gaines and Yoakum counties, second largest in the state, into the picture when he testified that his firm had connections to only 1 of its 10 wells.

The estimated daily average allowable this week was 1,528,555 bbl., a gain of 1,704 bbl. as the number of wells on proration schedules increased 112 to 91,834. West Texas recorded the biggest rise of 1,573 bbl. average net daily, boosting it to 256,829 bbl.

FUNCTION OF A TEMPORARY INJUNCTION in a Rule 37 permit suit was more clearly defined last week by the Third Court of Civil Appeals. The state, in appealing from a temporary injunction against a commission permit for a well in the East Texas field, had maintained that the "status quo" was the status established by the permit; that it could not be overturned by an injunction until after a hearing. In the court's opinion it was stated:

"The contention (of the commission) is predicated upon the general and well-organized purposes of a temporary injunction. . . . Manifestly no such case is here presented. There is no vast difference between willful violation of a general rule of the commission, mandatory in character and applicable to all alike . . . and an individual exception to a general rule, not mandatory in character. And where it is predicated upon confiscation, the relative private property rights as between him and the adjacent lessees, that is, whether his tract would be drained, or his neighbor's tract would be drained, of the oil in place, is usually determinative of the issues. The status quo then becomes the relative property rights of the permittee and the protestants, which, when they pursue the method of attack prescribed by the statute, they are entitled to have protected. And where these rights of either party would be so damaged by the conduct of the other that he has no adequate remedy at law before a trial can be had on the merits, he is entitled to have such rights preserved by temporary injunction . . .

"To sustain appellant's contention would be in effect to hold that a temporary injunction could never be granted where a permit has been granted by the commission, except where the commission's order showed upon its face to be void."

P. J. HOFFMASTER was reappointed director of conservation in Michigan by the Michigan Conservation Commission last week. Mr. Hoffmaster as director is also supervisor of wells and director of the oil and gas division of the commission's activities

KANSAS

ALLOWABLE PRODUCTION in April, set by the Kansas Corporation Commission, will hold good through May and June unless the commission sees fit to change the figure. It will not be necessary for it to hold a meeting of producers and purchasers before taking action.

NEW MEXICO

THE NEW MEXICO CORPORATION COMMISSION on April 19 amended its oil-gaging rule to give 100 per cent measurement on New Mexico oil stored for transportation by pipe-line companies, effective April 22.

The announcement was made by Commission Chairman Robert Valdez, who in the previous week presided at a hearing at which a group of producers protested the long-standing rule for a 98 per cent measurement formula.

The protesting oil men charged the 98 per cent formula was "discriminatory," and that the 2 per cent automatic deduction resulted in the loss of thousands of dollars in annual revenue for them.

They testified at the hearing that establishment of a 100 per cent tank table could be expected, at the present price of crude, to increase the state's annual revenue as an oil-royalty holder by more than $30,000 and producers' income by more than $500,000.

ARKANSAS

ARKANSAS SUPREME COURT in a unanimous decision upheld the authority of the Arkansas Oil and Gas Commission to halt production in the state's regulated oil fields in emergencies without a hearing.

The opinion by Associate Justice E. L. McHaney said that whether an emergency existed was for the commission and not the courts to decide unless fraud was shown.

Loser in the appeal was the Lion Oil Refining Co. at El Dorado which had contested an order of the commission last August 17 which shut down production for 10 days.

The opinion affirming the Union Chancery Court, made no reference to the company's contention that the order, issued in concert with other Mid-Continent oil-producing states, was for price-fixing purposes and not the prevention of waste.

Production was halted a few days after major purchasers in Arkansas cut the price of crude oil 20 cents a barrel.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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No Alternative

A great deal has been said on this page in recent weeks regarding the lack of balance between supply and demand in the industry's operations. It has been pointed out that one of the largest increases in total demand for petroleum products ever known has meant little to the industry because of the continuing tendency to overproduce even this expanded market.

As a consequence, the industry has not benefited as it should from this record consumption of its products and does not at this time have a generally strong statistical position, a condition which is reflected in markets —particularly all grades of gasoline.

Earnings of some companies have been larger than they were a year ago, mainly from the carryover of conditions developed by the shutdown of fields in southwestern states last August and the starting of the war immediately following.

The improved statistical position which developed in the latter part of last year has been largely dissipated, and, in addition, there have been other trends as threatening as any the industry has ever faced.

Fortunately, due to the heavy demand, it is possible to rectify quickly recent mistakes and to get under way an operating program which will assure a satisfactory summer and fall period.

The immediate need for May is a reduction in state allowables and domestic production at least 200,000 bbl. daily from present levels.

The industry, as a unit, for the past 2 months has ignored obvious conditions reflected in the fact that crude-oil production has been close to 300,000 bbl. a day in excess of the Bureau of Mines estimated demand.

The accuracy of the Government's estimates is revealed by the fact that crude-oil stocks have increased more than 10,000,000 bbl. since March 1 and gasoline stocks have declined so that they are now 15,000,000 bbl. higher than a year ago.

It is futile to blame this on the war or other developments outside this country. The war has been held responsible for a reported decrease of approximately 92,000 bbl. a day in exports of crude oil and products. The Venezuela treaty has brought an increase of 71,000 bbl. a day in imports.

These are not, however, the controlling factors in the present statistical situation, since the increase in domestic demand for petroleum products far exceeds this increase in imports and decline in exports.

The gain in domestic consumption of gasoline so far this year is more than twice as great as the decrease in exports. In the case of kerosene the increase for the 2 months was three times as much, and for gas-oil and residual fuel oil the domestic gain in demand was nearly 10 times as large as the decrease in foreign shipments.

This explains why the total demand for domestic crude oil and refinery products has established new records and will continue to do so throughout the year regardless of developments outside this country.

A reduction of 5 to 7 per cent in crude-oil production for the next 30 to 60 days, with no general increase in refinery operations, will quickly correct the conditions that have developed.

The government estimate of crude-oil demand for May of 3,601,000 bbl. daily includes as accurate a state division of the May markets as it is possible to obtain at this time. An announcement during the next few days that these recommendations will be followed would be heartening to the entire industry, and would receive the support of all who are familiar with current conditions.

Any other program points to major adjustments in operations and markets later in the year.

A. P. I. Marketing Division Meets to Discuss Problems

CHICAGO, Apr. 22.—The American Petroleum Institute's revived interest in marketing took definite form here today when the central regional committee of its marketing division held the first of what is planned to be regular quarterly meetings. Attending were a majority of the committee's 40 members, as well as several dozen others, representing every type of marketing operation in the oil industry.

Discussion of the four principal papers indicated those attending were closely following the subjects treated. At the close of the meeting optimism was expressed over the outlook for extension of the committee's activity. Already plans are being made looking toward a program for the next meeting. There was a fairly good jobber attendance.

B. L. Majewski, chairman of the committee, made it clear at the outset that "this is not a meeting to fix anything." He emphasized that it was an effort to bring about an educational campaign for all marketers, to find out what is wrong with the oil business and try to right it in a legal way.

In a paper on Marketing Cost Anaylsis. P. E. Lakin, vice president of Shell Oil Co., Inc., said the industry must fill the wants of the consuming public as economically as possible, and that this is especially important because the industry's products and services have an extremely important effect on the wellbeing of a vast majority of the population of the country.

Sound business judgment in regard to costs is necessary for both the executive and the field personnel, Mr. Lakin said. Product development and product improvement are essentially just as much a marketing function as day-to-day distribution. Marketing must collaborate with refining and production toward the making of each product in the most economical manner. Sales quotas, Mr. Lakin said, must be set not merely on the basis of those products which fit into the distribution system of a particular company, but they must be set also in collaboration with the manufacturing end so that optimum economies will obtain.

For example, while the marketing division may desire to sell relatively large quantities of gasoline and small quantities of distillate fuel, sales quotas established on such basis may actually be not only out of relationship to market demands, but entirely out of line with ability of the refinery to produce economically.

Mr. Lakin declared there must be cordial contact between large and small operator groups in the industry to establish more economic distribution methods. He urged dissemination of sound cost analysis information not only to an operator's organization, but to all his distributor and dealer organizations as well.

Discussion of the subject led by Paul Ryan, of National Refining Co., brought out the assertion that costs were being subjected to an analysis unheard of until recently and that inefficient operations were being cut off by many operators in many areas. Marketing must be made the fountain head of all policies of the company, because it is the place where the money of the customer first comes. Early-day marketing was easy going, because it wasn't necessary to be efficient in order to make money, it was asserted.

R. C. Alden, of Phillips Petroleum Co., in a paper on "Antiknock Requirements of Today and Tomorrow," deplored the amount of attention given the octane number at the expense of other aspects of gasoline performance. In particular, volatility of gasoline offers as fertile a field as antiknock requirements for improved values to the motoring public, he said.

Whether antiknock requirements will continue their uptrend or some entirely unexpected discovery in engine design or fuel characteristics will relegate antiknock requirements to a subordinate position, he admitted engineers are seriously considering the possibility of higher antiknock requirements.

L. C. Welch, of Standard Oil Co. of Indiana, said the petroleum industry should anticipate the demand for more diesel fuels and to facilitate distribution should make every effort to supply the minimum number of products providing satisfactory service.

R. A. Ludlow, director of the Institute's lubrication committee, described the committee's plans for cooperative endeavor with the automotive industry.

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California Oil Producers Agency Reelects Aubert President

L. L. Aubert, president of the Oil Producers Agency of California for 1939-40 was reelected at the annual meeting last week. Mr. Aubert, general manager of Bankline Oil Co., is also chairman of the Allocation Committee of the Central Committee of California Producers, a director of the United Landowners Association, vice president of California Petroleum Safety Board, president of Manufacturers Natural Gasoline Corp., a director of the Independent Petroleum Association of America, and is also identified with various Pacific Coast activities of the American Petroleum Institute.

Other officers chosen were: Maurice Machris, Wilshire Oil Co.; C. C. Spicer, Republic Petroleum Co.; L. A. Cranson, Honolulu Oil Corp., and C. A. Johnson, Holly Oil Co., vice presidents; W. A. Russell, Seaboard Oil Co., secretary-treasurer; D. P. Murdy, Wilshire Oil Co., assistant secretary-treasurer.

Rush M. Blodget, manager and executive vice president of the agency since its organization, was continued as executive vice president.

Election of one-third of the board membership for 3-year terms saw E. E. Bennett, Union Pacific Railroad Co., newly elected and W. L. Adkisson, Taft Investment Co.; L. L. Aubert, Bankline Oil Co.; H. A. Bardeen, Bardeen Oil Co.; R. A. Broomfield, Barnsdall Oil Co.; W. S. Fisher, W. M. & M. Oil Co.; Robert S. Lytle; C. C. Spicer, Republic Petroleum Co.; Lawrence Weill; Lloyd Williamson, California Star Oil Co., reelected.

License Tags for Non-Oklahoma Trucks to Exposition

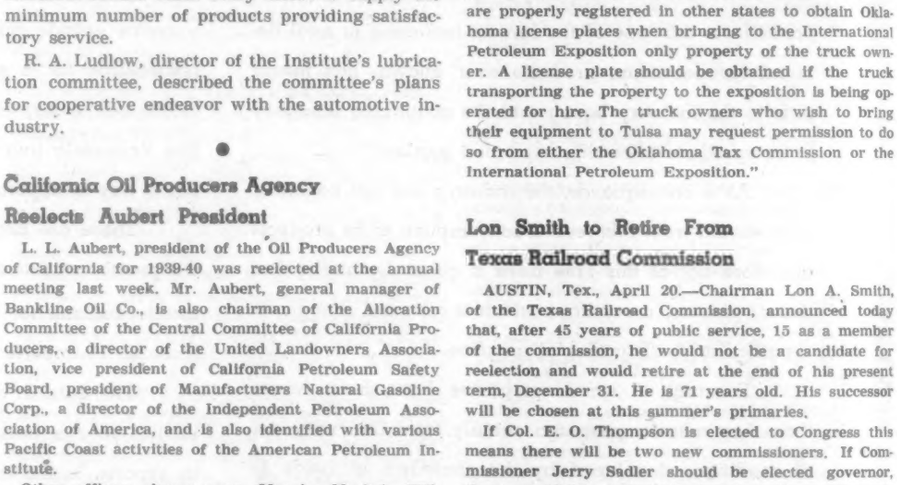
The following communication, just received from the Oklahoma Tax Commission, is quoted for the information and guidance of exhibitors at the International Petroleum Exposition in Tulsa May 18-25:

"In reply to your letter, in which you ask for information pertaining to the operation of trucks coming into Oklahoma hauling thereon only property to be exhibited at the International Petroleum Exposition, Oklahoma, will not require trucks from other states which are properly registered in other states to obtain Oklahoma license plates when bringing to the International Petroleum Exposition only property of the truck owner. A license plate should be obtained if the truck transporting the property to the exposition is being operated for hire. The truck owners who wish to bring their equipment to Tulsa may request permission to do so from either the Oklahoma Tax Commission or the International Petroleum Exposition."

Lon Smith to Retire From Texas Railroad Commission

AUSTIN, Tex., April 20.—Chairman Lon A. Smith, of the Texas Railroad Commission, announced today that, after 45 years of public service, 15 as a member of the commission, he would not be a candidate for reelection and would retire at the end of his present term, December 31. He is 71 years old. His successor will be chosen at this summer's primaries.

If Col. E. O. Thompson is elected to Congress this means there will be two new commissioners. If Commissioner Jerry Sadler should be elected governor, there would be a complete change in the commission membership. Following Mr. Smith's announcement, state Sen. Olan R. Van Zandt, of Tioga, Grayson County, announced as a candidate for the commission.



Newly elected officers of the Oil Producers Agency of California for 1940-41 (seated, left to right): Maurice Machris, vice president; L. L. Aubert, reelected president; C. A. Johnson, vice president; (standing): W. A. Russell, secretary-treasurer; D. P. Murdy, assistant secretary-treasurer; Rush M. Blodget, executive vice president. Also elected vice presidents were L. A. Cranson and C. C. Spicer

International

East Indies . .

Exploration Permits Granted in Borneo

EXPLORATION permits, under 5-A contract conditions, covering the so-called Kapoeas, Boento, and Mahakam Delta blocks in the south and east divisions of Borneo, have been issued to Nederlandsche Koloniale Petroleum Maatschappij, Batavia, and N.V. de Bataafsche Petroleum Mij., Netherland East Indies subsidiaries of Standard-Vacuum and Royal Dutch-Shell, respectively.

B. P. M., the Shell subsidiary, also has requested an exploration permit for the island of Misool, Moluccas Residency, according to reports reaching this country through the Department of Commerce.

It was previously reported that the government was considering granting the same two concerns rights under 5-A contracts for exploration in certain areas in Central Java (Japara, Rembang), East Java (Bodjonegore) and the Riouw archipelago.

Eight tests have been drilled on the Ogan block in Sumatra by N.K.P.M., but no production of consequence has been discovered. The company is active in drilling and in geophysical investigation of the marshy areas in northeastern Borneo. Plans call for further drilling activity, particularly in the Bieureun block in Acheen. B. P. M. has been granted exploration rights to about 725,880 acres on the island of Madura and on another parcel of 230,791 acres in the residences of Surabaya and Malang for a period of 5 consecutive years.

Exploratory efforts continue in central Sumatra where both the N.K.P.M. and Nederlansche Pacific Petroleum Mij. (Standard of California and Texas Co.) hold large concessions. N.K.P.M. is operating in Acheen and in the southern part of Siask and Indragiri. Nederlansche Pacific is concentrating its efforts in Siak and Rokan.

No discoveries have been reported so far by either of the companies exploring Central Sumatra but the program which has been in progress for 3 years continues. Sufficient geological evidence is in hand to justify further drilling operations.

Russia . .

Exported Surplus Is Going to Germany

FOR the second consecutive month since the war started Soviet Russia failed to ship any petroleum or products through the port of Istanbul into the Mediterranean, indicating that all exportable supplies are going to Germany by rail, inland waterways and through Rumania. Although Soviet petroleum exports to Mediterranean routes had dropped to an unimportant figure before European hostilities broke out, the annual figure had been in the range of 7,500,000 to 10,000,000 bbl. through the end of 1939.

The first Soviet petroleum to move through the new waterway system to Germany, involving construction of a canal linking the Pripet and Bug rivers, was reported by "Pravda," the Communist Party newspaper in Moscow, to have started its upstream journey April 14. There were 16 tankers, carrying an average of 34,810 bbl. each, or a total of 556,960 bbl., loaded at Astrakhan, port on the Caspian Sea and they started up the Volga River on the first leg of the movement to the German frontier in what was formerly Poland.

The linking canal, which made possible the water movement of Soviet petroleum into German territory without passing through ports and routes controlled or influenced by the Allies, is 10 miles long and is equipped with eight locks.

The Pripet River empties into the Dnieper and the Bug River joins the Vistula northwest of Warsaw. The canal is about 50 miles east of Lublin in former Polish territory taken by Russia in the partition of Poland with Germany.

Germany . .

Exports to Germany Are Being Resumed

BRIEF duration of the stalemate between Germany and Rumania, which resulted in embarges by both countries on shipments of certain vital commodities, may indicate just how badly the Reich needs a continuous flow of petroleum from the restricted sources remaining open to her.

After Germany had opened the dispute, principally by embargoing shipments of metallurgical coke to Rumania, King Carol's government placed a ban on shipments of oil and cereals to the Reich. Within less than a week after the loading of rail tank cars and barges intended for Germany had been ordered to cease, the German trade commission receded from its earlier demands. Among the demands previously made by Germany was a decrease in the value of the Rumanian lei in terms of the German mark and a reduction in the recently raised railroad freight rates. Still another demand made by Germany which figured in the crisis on Rumanian petroleum shipments was for the privilege of patrolling the Danube.

With numerous other sources of supply now closed to Germany, the 6,740,000 bbl. of petroleum products received from Rumania in 1939 takes on added significance. This is particularly true in view of the curtailed shipments in January and February occasioned by a particularly severe winter in southeastern Europe which held Danube River traffic ice-locked for a longer-than-normal period. Out of the 6,740,000 bbl. of petroleum received by Germany from Rumania last year, 3,743,000 bbl. were gasoline; 1,159,000 bbl., gas oil; 1,094,000 bbl., kerosene; 409,000 bbl., residual fuel; and 253,000 bbl. of crude. Smaller amounts of wax, asphalt and lubricating oils accounted for the remainder.

In the current issue of International Petroleum Trade, issued by the Department of Commerce, Germany's receipts of Rumanian petroleum for the past 2 years, listed by products, are shown as follows:

	1939	1938
Crude oil	253,000	114,000
Gasoline	3,743,000	3,021,000
Kerosene	1,094,000	1,009,000
Gas oil	1,159,000	674,000
Fuel oil	409,000	540,000
Lubricating oil	62,000	92,000
Paraffin wax	20,000	9,000
Asphalt	.....	23,000
Total	6,740,000	5,482,000

Netherlands . .

Fear Wars May Involve East and West Indies

SPREAD of the European war and threat that the Low Countries, including Holland, may be caught in the net sooner or later, focused attention on insular possessions of the Netherlands. The East and West Indies, colonial possessions of Holland, are two of the most important units of the world's petroleum industry and constitute the sources of vast real and potential supplies for the Allies as well as neutral nations.

If the Netherlands should be seized, informed persons in Washington were quoted last week, that there was a distinct possibility the 21 republics of North and South America would move to set up a temporary protectorate over the Dutch West Indies. Such action would be an outgrowth of the Monroe Doctrine. One of the considerations involved in protection of the Netherland West Indies is that two of the world's largest oil refineries are situated there. The combined refining facilities of Lago Petroleum and Transport Co., a Standard Oil Co. of New Jersey subsidiary, and Curacaosche Petroleum Industrie Mij., subsidiary of the Royal Dutch-Shell group, aggregate more than 500,000 bbl. of crude daily, in addition to cracking facilities for producing high-quality gasoline. The two refineries, located on the islands of Aruba and Curacao, provide the most important outlet for Venezuelan crude oil. Practically all of the production from the two refineries is exported and it alone constitutes one of the important sources of supply for western Europe, including France, England and Italy.

Further indication of the interest shown in the possibility of Holland becoming involved in the war was given in Tokio where Japan's foreign minister, Hachiro Arita, asserted a direct interest in the Netherland East Indies. In addition to producing approximately 70,000,000 bbl. of crude oil annually, the Netherland East Indies are occupied by seven refineries having combined crude-oil capacity of 212,000 bbl. and cracking facilities to process about 36,500 bbl. daily. There has never been much doubt that Japan's chief interest in the position of the Netherland East Indies revolved around the petroleum supply. Foreign Minister Arita last week summoned the Netherland minister, Gen. J. T. Pabst, and handed him a statement in which Japan stressed its economic interdependence with the East Indies and declared that any repercussions of the war on the Netherland insular possessions would produce an undesirable situation from the standpoint of peace and stability in East Asia.

Vernacular and Japanese-owned English language newspapers have been speaking freely of a "Japanese protectorate" over the Netherland East Indies, according to reports reaching this country. The production and refining facilities in the Netherland East Indies are approximately equally divided between Standard Vacuum Oil Co., a jointly owned subsidiary of Standard of New Jersey and Socony-Vacuum Oil Co., Inc., and subsidiaries of the Royal Dutch-Shell group, known locally under the initials of N.K.P.M. and B.P.M., respectively.

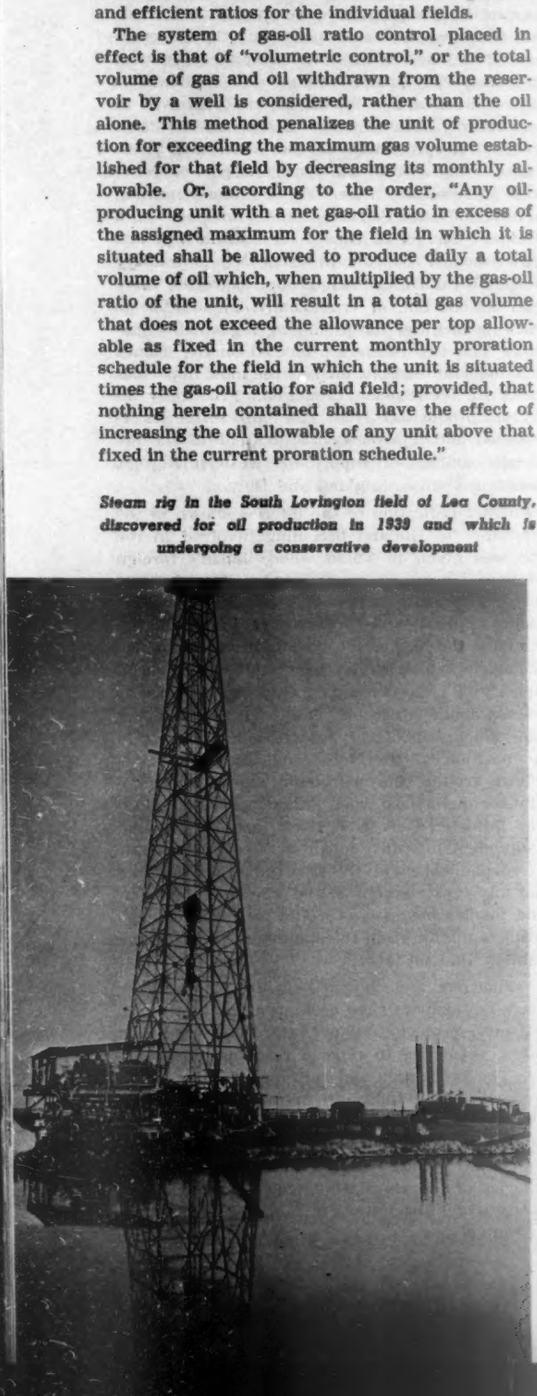
Minimum Gas-Oil Ratio Order in New Mexico

By D. H. STORMONT

HOBBS, N. M., Apr. 22.—To further conservation of reservoir energy and assure that maximum advantage is taken of solution gas in producing wells, the New Mexico Conservation Commission recently placed in effect a tentative order setting a maximum gas-oil ratio for each field in the state. And, in order to arrive at a more concrete basis for setting the maximum ratios in a final order, a state-wide survey is now under way. When completed some 2,800 wells will have been tested for their gas-oil ratios and producing characteristics, so that by studying these data and hearing the recommendations of the operators the commission will be better enabled to set equitable and efficient ratios for the individual fields.

The system of gas-oil ratio control placed in effect is that of "volumetric control," or the total volume of gas and oil withdrawn from the reservoir by a well is considered, rather than the oil alone. This method penalizes the unit of production for exceeding the maximum gas volume established for that field by decreasing its monthly allowable. Or, according to the order, "Any oil-producing unit with a net gas-oil ratio in excess of the assigned maximum for the field in which it is situated shall be allowed to produce daily a total volume of oil which, when multiplied by the gas-oil ratio of the unit, will result in a total gas volume that does not exceed the allowance per top allowable as fixed in the current monthly proration schedule for the field in which the unit is situated times the gas-oil ratio for said field; provided, that nothing herein contained shall have the effect of increasing the oil allowable of any unit above that fixed in the current proration schedule."

Steam rig in the South Lovington field of Lea County, discovered for oil production in 1939 and which is undergoing a conservative development



Thus, while the order does not necessarily require that remedial work be done to correct high ratios, wells producing with substantially higher ratios are reduced in allowable to the extent that, wherever possible, it would be economically feasible to correct the ratio.

According to the commission's latest gas-oil order, the following maximum ratios have been temporarily assigned the various fields, pending issuance of the permanent order:

Fields given a 2,000-cu. ft. ratio are: In Lea County, West Eunice, Halfway, Lynch, North Lynch, Rhodes, South Lovington and Vacuum; in Eddy County, Artesia, High Lonesome, Leonard, Loco Hills, Red Lakes, Robinson, Shugart, Barber and Getty. The Hobbs field was given a 4,000-cu. ft. ratio and in Eddy County the Grayburg-Jackson, Maljamar and North Maljamar fields. Fields given a 5,000-cu. ft. ratio were Arrowhead, Hardy, Lynn and Skaggs, all in Lea County. A ratio of 6,000 cu. ft. was set for the Monument field. The Eaves field, Eunice, Langlie, Mattix, North and South Penrose, Skelly and South Eunice ratios were set at 7,000 cu. ft., while 10,000-cu. ft. ratios were set for Cooper and the Jal field of Lea County. The Arrowhead field was formed from parts of the former Eunice, South Eunice and Penrose fields, while the North Penrose and South Penrose fields were formed from the remainder of the former Penrose field.

Correct High-Ratio Wells

Although gas-oil ratios have not carried any weight in determining the allowables of New Mexico wells in the past, a great amount of remedial work has been done in the past 2 years toward correcting high-ratio wells. This work, like that of instituting the present survey, was done at the operators' own volition. As a consequence, when the survey is completed and maximum ratios set for each field, it is believed only a relatively few wells will be heavily penalized. The total allowable of several companies having relatively large holdings in Lea and Eddy, however, has been slightly reduced since the temporary order was placed in effect.

Pending completion of the survey, gas-oil ratios most recently reported, or those measured under the supervision of the commission, are being used in calculating penalties for any producing unit. In order that a field's full allowable may be produced during the month, oil that results from penalties to high-ratio wells is being redistributed among other wells in that field.

The survey is being conducted under the supervision of the commission's state geologist, A. Andreas, through the proration office at Hobbs. The actual work is being done by engineers of both major and independent companies, working in six crews of two each. The complete survey involves the testing of approximately 1,450 wells in Lea County and 350 in Eddy, almost 1,200 of which have been tested. All wells are being tested in a uniform manner; the test lasting over a 48-hour period, with the second 24-hour flow being used to measure the gas-oil ratio. The flow tanks are gaged at the beginning and end of this period and the gas flow continuously measured by recording meters.

Most operators, anticipating the testing of their wells and the final order, are doing whatever can be done to correct their well ratios. This remedial work consists mostly of setting formation packers. Aside from those in the sand areas of southeast Lea County, relatively few of the wells have been shot so that casing off of the gas zone is accomplished fairly easily through use of packers. In the sand areas, work consists mainly of setting liners or cementing off the gas zones.

Speakers Stress Importance of Additives in Lubricants

(Continued from Page 58)

der and ring wear; (6) insuring open oil channels; (7) minimizing blow-by of gases into the crankcase, and (8) affording economical consumption.

Because of the fact that used oil has greater load-carrying capacity, his company keeps 8,000 gal. circulating through engines and this oil is used to fill crankcases of new engines, he said. This provides additional film strength and also a protective coating on cylinders, especially important in marine transportation.

Impingement of flame on cylinder walls causes local hot spots and occasions severe trouble, he said, and therefore materials and lubricating oils must be chosen on the basis of their ability to dissipate high temperatures. The structure of bearing materials is also important in dissipating high temperatures, Mr. Rosen said, and he briefly mentioned the babbitt type with a thermal sponge as having high heat-transfer ability and therefore superior service characteristics.

Crankcase conditions were also discussed by Mr. Rosen. He said they constitute a fine aeration system and because of high temperatures result in oxidation, sludging, viscosity increase, corrosion of bearing metal, etc. Oil should be cooled below 175° F., he said, and added that it can be cooled from 215° to 140° F. by cooling outside the water system. He said the trend toward higher speeds demanded oils of greater film strength, with detergent influences, higher stability and higher paraffinicity.

L. A. Calkins, of Valvoline Oil Co., said the general problem of all three, aircraft, automotive, and diesel lubrication, is the effect of heat and air, and the trend to greater power means accentuation of this problem. He held its solution was a matter of cooperative endeavor between the automotive and oil industries.

J. B. McCauley, of Chrysler Corp., said more severe conditions must be expected in the future and, therefore, a difficult problem that will require the cooperative efforts of both industries to solve.

W. B. McCluer, of Kendall Refining Co., said there is an encouraging trend toward high-quality base oils which seem essential. He regarded the similarity in the problems of the three types of lubrication as advantageous, as the answer in one will possibly be at least a partial answer in the others.

O. D. Treiber, of Hercules Motor Co., said that since a diesel eats up 50 times its original costs in fuel and lubricants, the oil companies must assume more and more the problem of fueling and lubricating them, and apparently are doing so.

A. C. Willey, of Case School of Applied Science, emphasized the need for the development of laboratory tests that will give results correlative to actual engine tests.

New Antitrust Prosecutions Planned by Washington

By HENRY D. RALPH

WASHINGTON, D. C., Apr. 22.—New antitrust suits in the petroleum industry may be brought by the Department of Justice soon after the Supreme Court's decision on the Madison case.

For several years the department has been investigating petroleum-marketing conditions on the East Coast and on the West Coast, and Asst. Atty. Gen. Thurman Arnold wants to push these cases and to bring another suit, particularly on the East Coast. His present tentative plans call for bringing an action to divorce the major companies from their marketing operations. No decision on bringing a suit nor on the type of action to be sought is expected until the department has made a thorough study of the Supreme Court's Madison case decision, and probably not until after some further progress is made in the pending West Coast case. The East Coast investigation has been rather dormant for some time as most of the department's staff has been busy with building cases and other matters, but the investigation is far from dead and information is still being collected to keep the files current. Mr. Arnold told the House appropriations committee last January that among the cases for which he desired funds are "the oil-cracking case, the Pacific Coast oil case, the East Coast oil case, and the petroleum marketing divorcement suit."

This statement would indicate he may be planning, if the Madison decision is favorable to the Department of Justice, to bring an East Coast case on grounds somewhat similar to those in the Madison case, and also to bring a separate marketing-divorcement suit covering the entire United States. According to Justice Department officials, it has not yet been decided whether marketing divorcement will be a part of the projected East Coast case or whether it will be a separate suit, but there is some information that Mr. Arnold is already looking around for the best federal court in which to file a divorcement suit.

Nothing more definite is known about the department's plans for bringing action against the oil-cracking patents pool. Such a suit was given new life by the Supreme Court's recent decision in the Ethyl Gasoline patent case. Control of business through patent licenses and pools has been attacked by Mr. Arnold on many occasions and he intends to take action against a number of industries as soon as part of his staff can be taken off the building cases now pending.

Even if the Madison decision should be largely unfavorable to the Government the Justice Department probably will go ahead with its plans for a divorcement suit as soon as it can spare the men and the funds. If brought on the scale now contemplated this would be one of the largest antitrust suits ever filed.

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Tideland Controversy

THE controversy over federal claims to submerged oil deposits off the coast of California has now been placed before President Roosevelt for a decision. The Justice Department has transmitted to him a voluminous report on the submerged-oil situation and on the claims of the Navy and Interior departments that the federal Government has ownership of oil deposits under the ocean between the low-tide mark and the 3-mile limit.

The State of California contends that it has the title to the ocean beds out to the 3-mile limit, and the state and its political subdivisions have permitted operators to drill and produce from these deposits. Because of the opposition from California and from other states having coastal lands Congress has not approved any of these resolutions. The Navy and Interior departments have been pressing the Department of Justice to bring a suit regardless of the attitude of Congress, but the department does not care to take the initiative because of the political considerations involved and because the legality of the Government's claim to title is a matter of much doubt. However, the department probably is ready to bring a suit if directed by the president, and if the president asks Congress to assume the responsibility full administration pressure would be used to secure action on the pending resolutions.

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Truck-Safety Regulation

COMPREHENSIVE rules and regulations covering the transportation of petroleum products, compressed gases, explosives, chemicals, and other dangerous articles by motor truck in interstate commerce have been promulgated by the Interstate Commerce Commission to become effective June 15. The new regulations apply to all common carriers and contract carriers by motor vehicle, to supersede all previous regulations.

Wherever possible they are identical to those for shipping the same articles by rail and in many cases the new requirements are the same as those now in effect for motor transportation. The regulations cover methods of packaging, invoicing, labeling, loading, operation of vehicles, and specifications for tanks and containers. Separate sets of regulations apply to six general classes of dangerous articles—explosives, inflammable liquids, inflammable solids and oxidizing materials, corrosive liquids, compressed gases, and poisons. Petroleum products and other inflammable liquids with a flash point above 80° are not subject to the regulations.

The new regulations are issued in the commission's docket ex parte MC-13, which was begun June 14, 1937. Three preliminary drafts of the regulations were issued and hearings were held in Los Angeles, Tulsa, and Washington. The regulations are issued under authority of both the Transportations of Explosives Act of 1908 and the Motor Carrier Act of 1935, and are the first comprehensive regulations on motor carriage of dangerous articles.

Regulations do not apply to private carriers, that is, company-owned trucks hauling their own products, and they do not apply to intrastate trucking which is not a part of an interstate movement. In docket ex parte MC-3, the commission is now investigating the need for applying safety regulations to motor carriers, and if this need is found a separate order will be issued applying parts of these or other regulations to private truck transportation of dangerous articles. State officials are expected to apply similar regulations for intrastate operations within their jurisdictions, although the I.C.C. has authority to apply these regulations to intrastate commerce if it is shown that safety of interstate commerce requires this.

Motor carriers will be required by the regulations to obtain from shippers certificates that the dangerous articles listed are properly described, marked, labeled, and packaged. Truck regulations include requirements as to loading, unloading, care of equipment, and operation, and there are restrictions on types of trucks, tanks, and trailers which may be used to haul various listed commodities. Each of the six commodity lists specifies exemptions, types of containers, and labeling requirements. Specifications for tank trucks for carrying various commodities are included, but these do not include basic design characteristics as this subject is still being studied and will be included in a supplemental order. There will also be a supplemental order on specifications for containers for shipping nonliquefied compressed gases. It is the intention of the I.C.C. to keep safety regulations for shipping dangerous articles by truck identical with those for rail transportation insofar as this is possible. A general revision of the rail regulations is now being made in docket No. 3666, and a final draft of this revision will be issued shortly and a date set for hearings.

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Tanker Regulation

THE House subcommittee authorized to investigate the water transportation of petroleum products has not yet reached a decision on holding public hearings, but it has held two executive sessions at which it obtained information on recent increases in tanker charter rates between the Gulf and the North Atlantic ports. Russell B. Brown, general counsel of the Independent Petroleum Association of America, Paul E. Hadlick, counsel for the National Oil Marketers Association, and officials of the Maritime Commission, appeared and supplied information regarding these rates. A further executive session will be held later this week at which representatives of some of the major oil companies operating tanker fleets will appear.

Some members of the subcommittee have expressed the views that an informal investigation may result in a reduction of the high charter rates. If this does not come about, the subcommittee may ask the House rules committee to report out the pending resolution for a congressional investigation of water transportation of petroleum in order that a more thorough study may be made.

B. of M. Estimates May Demand Is Under Present Production

THE daily average supply of domestic crude oil estimated by the Bureau of Mines to meet the market demand in May 1940 is 3,601,000 bbl. This is 51,000 bbl. (1½ per cent) more than the estimated demand for April and is almost the same as the actual demand for May 1939.

Daily average crude-oil production and runs to stills during the 4 weeks March 9 to April 6 were 3,837,000 and 3,525,000 bbl., respectively. During this period domestic-crude stocks increased an average of 194,000 bbl. daily, indicating a daily average demand of 3,643,000 bbl., compared with 3,511,000 bbl. estimated by the bureau. This difference is attributable to larger runs—about 175,000 bbl. daily more than the bureau's estimate, which resulted in an addition of approximately 3,300,000 bbl. to the top-heavy gasoline inventories during the month of March. The increase of about 5,400,000 bbl. in domestic crude-oil stocks, in addition to the high runs, indicates that crude oil was being produced far in excess of current needs.

According to available data, the daily average domestic demand for motor fuel showed an increase of about 6.5 per cent for the first quarter of 1940 but the total demand increased only 3 per cent. Market trends for the second quarter indicate a probable increase of about 7.5 per cent in the domestic demand for motor fuel but an increase in total demand for only about 4 per cent, due to the sharp reduction in exports from last year.

The estimated total of finished and unfinished gasoline stocks on March 31, 1940, was approximately 102 million barrels, or 15 million barrels greater than a year ago. If this unusual seasonal increase is liquidated, it will supply the greater part of the expected increase in gasoline demand for both the second and third quarters, and the required refinery production of gasoline would approximate that of last year during these periods. As the demand for all oils indicates a moderate increase in crude runs, gasoline yields will be substantially below last year, if a proper balance between products is attained.

A higher seasonal yield of distillate-fuel oils is indicated to build up depleted stocks and provide for increased domestic demand. The domestic demand for heavy fuel oils, reflecting the drop in the index of industrial operations, currently is not greatly above last year, and from present trends, part of any additional requirements may be met by imports. A sharp decline in exports is an added factor in reducing the increase in the total demand for fuel oil.

If the decline in exports of crude oil continues, it may offset the expected increase in refinery crude required and result in only a minor gain in the total market demand for domestic crude petroleum in the summer months as compared with last year.

Due to the combined effect of these various factors, the Bureau of Mines does not anticipate that the forecast of market demand for domestic crude will be increased greatly either in June or July over May.

Motor fuel domestic demand.—The estimated domestic demand for motor fuel is 52,400,000 bbl., an increase of 6 per cent over the demand in May 1939.

The estimate of 2,800,000 bbl. for exports is 1,590,000 bbl. less than the actual exports for May 1939, and reflects the difficulties of obtaining tankers, the risk of overseas shipments, as well as curtailment of consumption through rationing and the diversion of purchases to other sources of world supply.

Stocks of finished and unfinished gasoline on February 29 amounted to 99,295,000 bbl. Statistics of the American Petroleum Institute indicate that stocks increased more than 3,000,000 bbl. during March, which would place them at least at 102,000,000 bbl. as of March 31. The reduction of these stocks to a normal point by fall will require the maintenance of a modest level of refinery operation during this spring and summer with particular attention being given to the accumulation of heating-oil stocks for the fall demand. The bureau estimates that finished stocks of gasoline will be reduced 4,200,000 bbl. during May.

Gasoline production.—Benzol and direct sales of natural gasoline are estimated as 1,000,000 bbl., making refinery production 50,000,000 bbl. This is distributed among the various districts as follows (thousands of barrels): East Coast, 6,680; Appalachian, 2,050; Indiana-Illinois, 9,880; Oklahoma, 2,860; Kansas-Missouri, 2,610; inland Texas, 3,650; Texas Gulf Coast, 12,370; Louisiana Gulf Coast, 1,540; inland Louisiana-Arkansas, 890; Rocky Mountain, 1,310; California, 6,160.

Runs to stills.—Natural gasoline to be blended at refineries is estimated as 5.5 per cent of the total refinery-gasoline production, or 2,760,000 bbl. The yield of straight-run and cracked gasoline is estimated as 43.9 per cent. The application of this yield to the production of 47,240,000 bbl. of gasoline gives crude runs of 107,630,000 bbl., or 3,471,900 bbl. daily. Foreign crude runs are estimated as 3,000,000 bbl.

Crude-oil exports are estimated as 5,000,000 bbl., which is 3,643,000 bbl. less than the abnormally high exports for May 1939. Crude oil to be used as fuel and losses is estimated as 2,008,000 bbl.

Total demand.—The total demand for domestic crude oil in May, as indicated by the estimates above, is 111,630,000 bbl., or 3,601,000 bbl. daily.

Crude-oil demand by states.—The breakdown of the total estimated daily demand for domestic crude oil of 3,601,000 bbl. gives the following crude requirements by states of origin. As these requirements may be supplied either from stocks or from new production, contemplated withdrawals from crude-oil stocks must be deducted from the bureau's estimate of demand to determine the amount of new crude required. These estimates are not recommendations for production but represent the projection of actual market trends by states.

ESTIMATED DAILY AVERAGE CRUDE-OIL DEMAND BY STATES (BARRELS)

(As no changes in crude-oil stocks are involved in these estimates, they represent demand rather than production)

State—	Forecast		Actual
	May 1940	Apr. 1940	May 1939
Texas	1,334,200	1,332,000	1,425,000
California	592,600	590,000	632,000
Oklahoma	408,100	413,000	475,000
Illinois	392,900	380,000	195,000
Louisiana	264,500	257,000	287,000
Kansas	158,100	151,000	183,000
New Mexico	103,900	100,000	100,000
Wyoming	72,900	66,000	76,000
Arkansas	64,500	64,500	50,000
Michigan	63,200	63,000	62,000
Pennsylvania	52,100	51,000	48,000
Montana	17,400	16,800	15,000
New York	14,900	14,900	16,000
Kentucky	14,500	15,800	14,000
West Virginia	10,000	11,000	11,000
Ohio	9,800	8,800	8,000
Indiana	8,100	7,800	3,000
Mississippi	5,800	3,900	.....
Colorado	3,500	3,500	2,000
Total	3,601,000	3,550,000	3,602,000

Persistent Weakness of Gulf Coast Markets Worrying Refiners

HOUSTON, Tex., Apr. 23.—Sentiment in the Gulf Coast refinery market the past week was that something must happen soon. What that is going to be, no one could guess, but with fuel oils, which for months have carried the market, slipping in price, and with no sign of any business in gasolines, speculation was rampant.

Bunker C fuel in bulk cargoes was reported offered in some instances as low as 85 cents, although there was no confirmation of actual sales at that figure.

No. 2 fuel, fairly well booked up for months as a diesel oil, also suffered weakening in price although there is not an excessive volume available. Some offerings were reported at 3⅝ cents although 3¾ to 3⅞ cents seemed to represent the market. Other grades of fuel carried corresponding price relationships.

Lack of gasoline demand continues a major puzzle. Sellers expected that with the warmer weather buying in substantial volume for eastern seaboard movement would develop, especially since there has been so little buying over the last several months. However, nothing has materialized and sellers are beginning to feel worried. Quotations of most sellers are being maintained at previously quoted levels.

Associates Honor P. H. Curry For 50 Years of Service

PITTSBURGH, Pa., Apr. 23.—Sixty associates in the oil and allied industries attended a testimonial dinner in the William Penn Hotel this evening in honor of P. H. Curry, president of South Penn Oil Co., who completed 50 years of service in the industry April 8. The dinner was given by members of the board of directors.

DEATHS

NICHOLAS ALBERT SCHULER, 58, retired independent oil operator of Tulsa, died suddenly April 14. He came from Robinson, Ill., in 1909, being employed by Oklahoma Natural Gas Co. and later at Drumright where he managed the Sapulpa Refining Co.

SEGER L. McKAY, 73, one of the sponsors of the first pipe line from the Tilbury field to Sarnia, Ont., and later an official of Union Gas Co. and Sarnia Gas Co., died at Daytona Beach, Fla. He was one of the founders of the Natural Gas and Petroleum Association of Canada.

JOHN HEAD, 86, for 50 years associated with Chatham Gas Co. and later Union Gas Co., died at Chatham, Ont., recently.

Wolverine-Empire Refining Co. Independently Owned and Operated

Because of the omission of the words "cracking plant" in the Wolverine-Empire Refining Co. listing of personnel of refineries in the United States in the March 28 issue of The Oil and Gas Journal it was incorrectly stated that the Wolverine-Empire Refining Co. is "operated under joint ownership of Pennzoil, Quaker State and Continental Refining Co." The four companies operate a common cracking plant but otherwise are entirely dissociated.

The Oil and Gas Journal requests that the information below be substituted for that appearing on Pages 178 and 183 of the March 28 issue.

The Wolverine-Empire Refining Co., founded in 1879, has operated continuously and exclusively under ownership management and is entirely independent. This extends to all operations, including marketing, all motor oils being distributed through independent outlets. The company, which runs only pure Pennsylvania Grade crude oil, was founded by the late A. L. Confer, who was succeeded at his death by the present president, E. W. Chase. All present officers of the company, which has stressed its independence of others as a major policy, have been with the company at least since 1911.

Following is the correct listing of the personnel:

Wolverine-Empire Refining Co., Oil City, Pa., New York, N. Y.

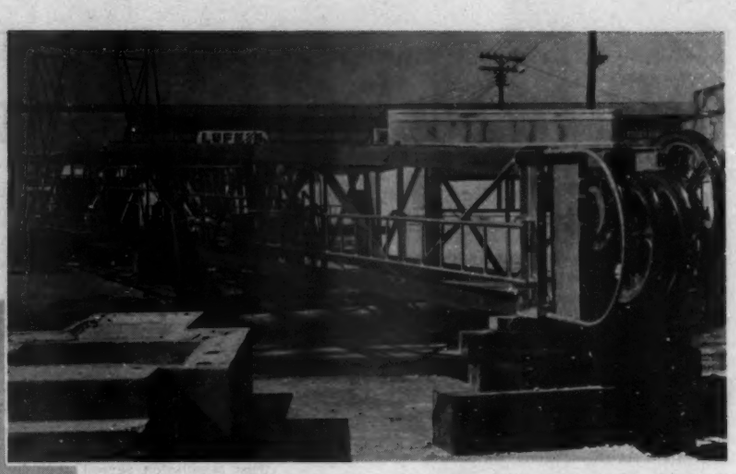
C. H. Ellingwood, *Chm. Bd.* E. W. Chase, *Pres.* A. W. Scott, *V. P., Sec.* and *Gen. Mgr. Ref.* F. W. Baer, *V. P.* and *Treas.* A. W. Cole, *Ref. Supt.* W. J. Scott, *Pur. Agt.* L. R. Cavanaugh, *Traf. Mgr.* Refinery located at Reno, Pa. Cracking plant operated under joint ownership with Pennzoil Co., Quaker State Oil Refining Corp. and Continental Refining Co.

Following is the correct listing for plant data:

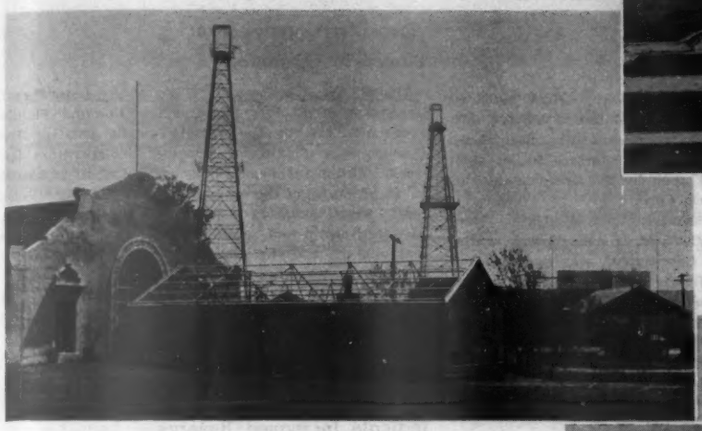
Company and plant location—	Crude oil cap.	Cracking cap.	Type of refg.	Type of cracking plant
Wolverine-Empire Refining Co., Reno	2,500	*5,000	S-C-L-W	Dubbs*

*Cracking plant operated jointly with Pennzoil Co., Quaker State Oil Refining Corp. and Continental Refining Co.

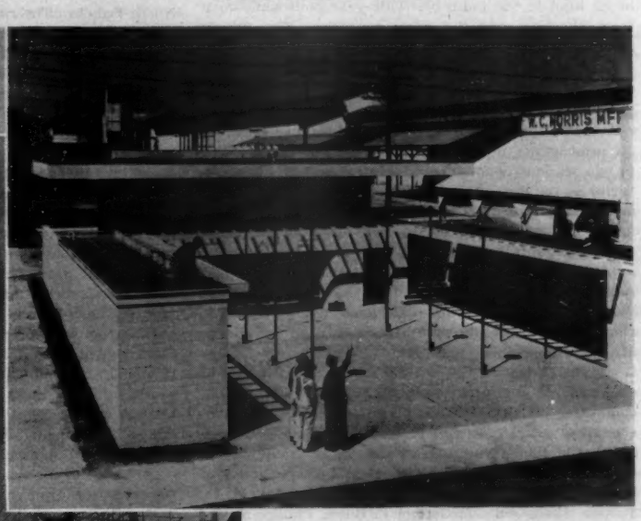
Getting Ready for the International Petroleum Exposition at Tulsa



Above: A "jack knife" derrick, ready to be pulled into position. Portable equipment, including this type of derrick and skid, truck and trailer-mounted portable rotary drilling rigs will be prominently displayed at the exposition at its 1940 showing which will be held in Tulsa May 18-25

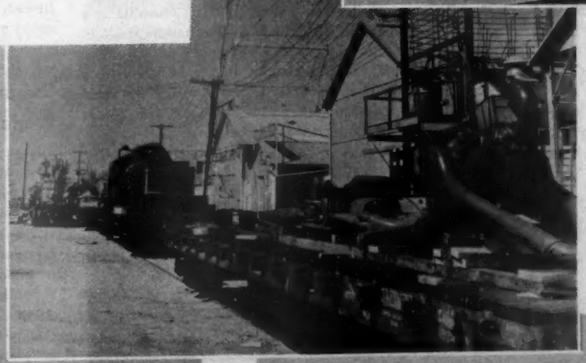


Above: The southwest end of the Hall of Science, showing framework of addition which was necessitated by overflow of exhibits secured by committee under Dr. Gustav Egloff and the late Dr. C. K. Francis. B. B. Weatherby was named to succeed Dr. Francis



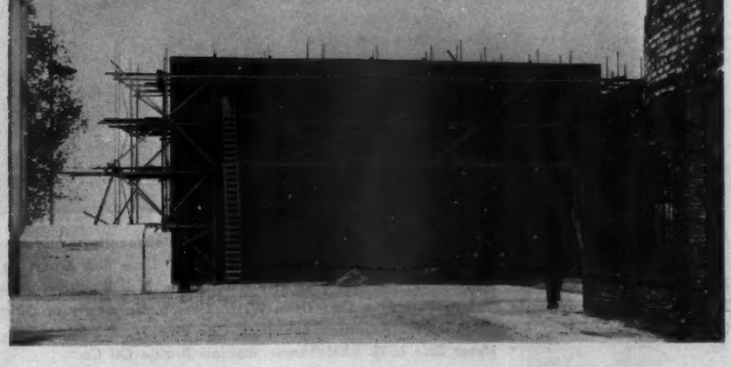
Right: Some of the early exhibits on flat-cars just outside the grounds awaiting placement on the 324,235 sq. ft. of exhibit space

Below: Facelifting on the exposition's largest of the six major exhibit buildings. Entire front of the Oklahoma Building is undergoing renovation in preparation for the opening of the exhibit



Above: The Dowell, Inc., exhibit building, on Skelly Drive, receiving the finishing touches. Dowell is one of 11 exhibitors who are putting up new permanent structures of their own

Below: Another of the exposition buildings receiving its "makeup" for the exposition's opening. At right is the new exhibitor's clubroom, an addition to the provisions for comfort



Natural-Gas News

Operating Men Attend Gas Measurement Short Course at University of Oklahoma

NORMAN, Okla.—The sixteenth annual Southwestern Gas Measurement Short Course has been conducted at college of engineering, University of Oklahoma, April 16, 17, 18, with a larger attendance than in any previous year. Of the 600 who registered, approximately 500 were sent to the course by their companies to study the common problems pertaining to the measurement and regulation of gas in order that they may become better qualified in the performance of duties connected with the operations. Speakers and instructors for the sessions and classes are members of the faculty of the university's college of engineering, representatives of the gas and oil industry, and engineers of equipment manufacturers and others directly interested in the objectives of the course.

This course has become the outstanding undertaking of its kind in the industry. This year men came to it from 21 states and 2 foreign countries. The unique position which the course has assumed is the result of the work of W. H. Carson who has developed it over a period of years as part of the program of the university for serving industry.

A special feature of the course this year was the attention given to operating ideas which were studied in two sessions devoted to "Operating and Maintenance Wrinkles for Meter Men." Altogether, drawings, models and descriptions of 22 "kinks" were presented which had been devised and successfully used by operating men in organizations in various parts of the country; a number of these men presented this material personally at these sessions.

Fay C. Walters, of Panhandle Eastern Pipe Line Co., chairman of general committee, has been in charge of the course this year. He is succeeded by R. L. Rountree of United Gas Pipe Line Co., who has been chairman of the program committee. The executive committee consists of Dean W. H. Carson, chairman, executive committee, University of Oklahoma; Gilbert Estill, Oklahoma Natural Gas Co.; L. G. Rheinberger, Sinclair Prairie Oil Co.; C. B. Day, Consolidated Gas Utilities Corp.; E. E. Stovall, Lone Star Gas Co.; R. D. Turner, Skelly Oil Co.; George P. Bunn, Phillips Petroleum Co.; F. D. Frank, Cities Service Gas Co.; D. A. Sillers, Lone Star Gas Co.

The exhibits of equipment were an important part of the course. Exhibitors were:

American Meter Co., Inc., American Recording Chart Co., Bristol Co., Chaplin-Fulton Manufacturing Co., Cutler-Hammer, Inc., Fisher Governor Co., Foxboro Co., Grove Regulator Co., Hanlon-Waters, Inc., Meter Parts Co., Moorlane Co., Pittsburgh Equitable Meter Co., Refinery Supply Co., Reynolds Gas Regulator Co., Roots-Connersville Blower Corp., Sprague Meter Co., C. J. Tagliabue Manufacturing Co., Taylor Instrument Co.

Senate Committee Decides Against Gas Probe Now

WASHINGTON, D. C., Apr. 22.—The Senate judiciary committee, considering a proposal for an inquiry into the alleged monopolistic practices in the natural-gas industry, decided today not to interfere in an anti-trust stipulation agreed upon by the Government and Columbia Gas & Electric Corp.

The subcommittee, Senators Carl A. Hatch, New Mexico, chairman; Matthew M. Neely, West Virginia, and John A. Danaher, Connecticut, was provided for by a resolution introduced by Sen. Gerald P. Nye, North Dakota. The resolution authorized the judiciary committee to investigate "whether any person, partnership, or corporation has violated, or is violating, the antitrust laws by acting in a manner which creates a monopoly or tends to create a monopoly for the control of the production, transportation, sale and distribution of natural gas and petroleum."

The subcommittee spent its entire time inquiring into the controversy between Columbia Gas & Electric Corp. and Missouri-Kansas Pipe Line Co. over control of the Panhandle Eastern Pipe Line Co., and if any investigation is recommended, it is believed it will be confined to that controversy.

Asst. Atty. Gen. Thurman Arnold and his aide, Tom J. Lynch, testified on the background of the case. In 1930 Missouri-Kansas, which had begun building Panhandle the year before to carry natural gas to the East, signed a contract with Columbia Gas for joint financing of Panhandle. Missouri-Kansas went into receivership in 1932, and Columbia Gas secured control of the board of Panhandle.

The Department of Justice began antitrust proceedings against Columbia Gas 3 years later, and in 1935 it entered into a consent decree whereby Columbia Gas was removed from majority control of Columbia Oil & Gas Co., one of the companies in the Columbia system, which controlled the stock of Panhandle.

Asserting that the decree had not removed Columbia Gas from control, the department this year drew up a new plan which it declares will free Panhandle from domination by Columbia Gas. The plan is now before the U. S. District Court in Delaware.

Former Sen. Robert J. Bulkley of Ohio, representing Missouri-Kansas, charged that the new plan is merely another consent decree and that under it Columbia Gas would still be in control of Panhandle.

Several representatives of Detroit also pleaded with the subcommittee to conduct an investigation. Detroit secured natural gas from Columbia Gas in 1936 as a result of the consent decree, and its spokesmen charged Columbia Gas was monopolizing the sale of natural gas in the entire Midwest. They also testified that under the new plan Columbia Gas would retain control of Panhandle.

No date has been fixed for resumption of the committee hearings.

New Lea County Plant Placed in Operation

HOBBS, N. M.—The new jointly owned natural-gasoline plant of El Paso Natural Gas Co. and Phillips Petroleum Co. in the Langlie-Mattix area of Lea County, New Mexico, was placed in operation last week. The plant has a daily capacity of 75,000,000 cu. ft. of gas, is of the absorption type and is connected to 408 wells. Location is in NE NW Section 34-24s-37e. El Paso Natural Gas Co. had charge of the construction and will operate the plant, with Phillips purchasing the plant's total natural-gasoline output. An experimental repressuring project will be undertaken in a portion of the field, and if successful will be applied to the whole area.

Canadian Western Operations Indicate Increased Reserve

CALGARY, Alta.—The position of the Canadian Western Natural Gas, Light, Heat & Power Co. is reviewed in a report by Pres. H. R. Milner to the shareholders. The report states that less concern for the gas supply for Calgary and other communities served by the company is felt at present than for a long time past. A test by affiliated interests on the Clearwater structure, 80 miles northwest of Calgary, has indicated substantial quantities of gas in that area. For many years the waste of gas in Turner Valley, on which the company is principally dependent for its supply, has caused concern; but as a result of the efforts of the Alberta Oil and Gas Conservation Board, this waste has been largely eliminated and the situation in every way improved. The company's reserve fields at Bow Island and Foremost were not drawn upon in 1939.

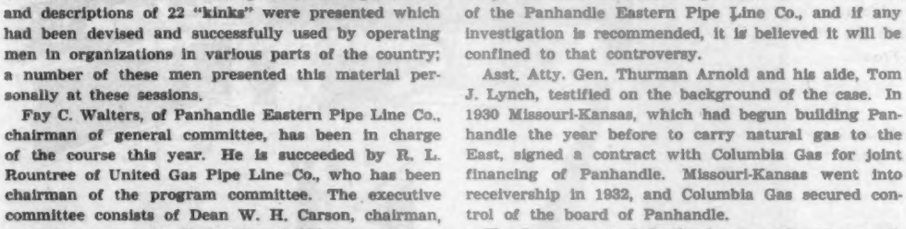
Since the report was issued, the Standard Oil Co. of British Columbia well in the Steveville field has indicated an additional reserve.

Texas Natural Gas Production Gains

AUSTIN, Tex.—Production of natural gas in Texas continued to gain in February with daily average withdrawals of 4,328,394,000 cu. ft., an increase of 3 per cent over January.

The Railroad Commission said extended cold weather was reflected in pipe-line deliveries of 1,560,068,000 cu. ft. daily. Recycling plants added to former gains with a processed volume of almost 600,000,000 cu. ft. daily, about five times the rate of slightly over a year ago.

Carbon-black and gasoline-plant operations remained at about constant levels as these industries made 1,348,000 lb. of carbon black and 2,104,000 gal. of natural gasoline daily.



Members of executive and general committees actively connected with sixteenth annual Southwestern Gas Measurement Short Course, conducted at Norman, Okla.: R. M. Scofield, Lone Star Gas Co.; Gilbert Estill, Oklahoma Natural Gas Co.; Kate A. Niblack, Oklahoma Utilities Association; R. L. Rountree, United Gas Pipe Line Co.; Fay C. Walters, Panhandle Eastern Pipe Line Co.; Dean W. H. Carson, University of Oklahoma; C. A. Gibson, Cities Service Gas Co.; Earl Eichlinger, Arkansas Louisiana Gas Co.; W. R. McLaughlin, Pittsburgh Equitable Meter Co.; L. G. Rheinberger, Sinclair Prairie Oil Co.

Natural Gasoline

El Palo Natural Gasoline Plant Put in Operation

HOBBS, N. M.—El Palo Natural Gas Co.'s new gasoline plant in the Langlie-Mattix area of Lea County was put in operation the past week. It is connected to 408 wells. Phillips Petroleum Co. has contracted to purchase the total gasoline output. It is an absorption plant with a daily capacity of 75,000,000 cu. ft. of gas. It is located in the NE NW NW NE Section 34-24-37.

Gathering station of the Standard Oil Co. of Louisiana in the Jennings, Louisiana, field, on the Gulf Coast. The mild weather permits the simple construction of the shed which protects the duplex pumps and the engine

Pipe-Line Activity

Work Progressing on Stanolind's 134-Mile Pipe Line in Kansas

Nearly half the stringing has been done for the 134-mile crude-oil pipe line now being constructed from the Bemis-Burnett district of Ellis County in western Kansas to Washington (northeastern), Kans. The contractors have laid 26 miles of pipe on the two jobs. One of the jobs is being handled by Gordon Construction Co., Denver, Colo., and Fredell Construction Co., Houston, Tex.; these two firms in their joint operations are going west from the Solomon River to Bemis. The rest of the work is being done by O. C. Whitaker, Inc., Fort Worth, and Brown & Root, Inc., another Texas firm, which is laying from Washington to the east bank of the Solomon River. The crossing at the Republican River was completed more than a week ago. Bad road conditions have impeded the work.

This line will consist of 127 miles of 10-in. and 7 miles of 8-in. The daily capacity of the line will be approximately 11,000 bbl. Contracts let for the line totaled approximately $1,350,000.

Northern Natural Will Loop Line In Kansas and Nebraska

Northern Natural Gas Co. of Omaha, Neb., has placed orders for approximately 14,000 tons of pipe for delivery during May and June. The order for 60 miles of 24-in. pipe was split between National Tube Co. and A. O. Smith Corp. of Milwaukee. Orders for approximately 49 miles of 12-in., 10-in., 4-in. and 2-in. sizes went to Youngstown Sheet & Tube and Republic Steel Corp.

The pipe will be used for looping and extensions to the upper part of Northern's system, which runs from Texas and Kansas into Minnesota.

Altogether, four loops are to be laid in the states of Kansas and Nebraska. Details of construction are still being considered and definite decisions have not been made regarding the extent to which coating will be applied. It has not yet been determined whether the line is to be of all-welded construction.

Southern Natural Will Spend $3,000,000 on New Facilities

Construction of additional facilities for bringing natural gas into Atlanta was announced by officials of Southern Natural Gas Co. in Birmingham, Ala.

Part of a $3,000,000 expansion program, the project will include enlargement of compression-station facilities and construction of approximately 80 miles of 22-in. transmission lines paralleling portions of the existing transmission line from Monroe, La., to Atlanta, Ga. There will be branch lines to Macon and Columbus, Ga., and Montgomery, Selma, and Mobile, Ala.

An 8-in. transmission line will be built from Calhoun to Chattanooga, with a compressor station at Cedartown.

The new transmission lines will supplement existing facilities and will increase the maximum load of the company system by approximately 15 per cent. Work on the program will begin within 30 days.

Officials of Atlanta Gas Light Co. said this company purchases its supply of natural gas from Southern Natural Gas Co. but that the two firms are entirely separate. They point out, however, that since the pipe line was completed almost 10 years ago, its capacity has been increased year by year to keep pace with the increase in demand for natural gas in the territory served by it. In Atlanta alone, they said, the demand has grown from a peak day of approximately 5,000,000 cu. ft. to just under 100,000,000 cu. ft. for several days last winter.

Originally, there was one compressor station on the line. There are now seven, with the new station making a total of eight.

Refinery News

Aurora Gasoline Will Add Cracking Unit at Detroit

CHICAGO.—Aurora Gasoline Co., which operates two refineries in Michigan, has just signed a license agreement with Universal Oil Products Co. for a Dubbs two-coil cracking unit to be installed in the company's Detroit refinery. Construction is to begin at once.

Aurora's Detroit plant is now running 3,000 bbl. a day of Illinois crude. Its other refinery, located at Elsie, Mich., is processing 2,500 bbl. of Michigan crude. Both are skimming plants.

The new unit will have a rated charging capacity of 1,800 bbl. a day of topped Illinois crude. Provision will be made for later conversion to a combination topping, cracking, and reforming unit with a crude capacity of 4,000 bbl. a day. Future additions of a catalytic polymerization unit is also provided for.

The contract for the work has been let to the Mid-Continent Engineering Co.

W. E. Slaughter, Jr., is president of Aurora, Henry E. Wenger, vice president; Max M. Fisher, secretary and sales manager.

Tide Water to Add Catalytic Refining Unit to Bayonne Plant

NEW YORK, Apr. 22.—Catalytic-refining capacity of 15,000 bbl. daily is to be constructed at the Bayonne, N. J., plant of Tide Water Associated Oil Co., it was announced in New York last week. The new unit should be completed and in operation toward the latter part of this year. The company has taken a license from the Houdry Process Corp., and has awarded a contract to E. B. Badger & Sons Co. for the design and construction of the unit which will replace older facilities.

The Tide Water Bayonne refinery has a crude-oil capacity of 55,000 bbl. daily and a current cracking capacity of 21,000 bbl. daily. It is a complete refinery yielding a full range of petroleum products including wax and lubricating oils in addition to motor fuel and furnace oils.

"The installation of this unit," the company statement said, "employing the latest scientific development in the manufacture of high quality gasoline, is being made in conformity to Tide Water Associated's policy of adopting the most modern methods for the manufacture of its line of Tydol gasolines and heating oils in the eastern territory."

About a year ago the Bayonne refinery was equipped with a modern solvent-dewaxing plant. The company has also recently installed at its refinery in Avon, Calif., additional cracking facilities and a polymerization plant for the production of a gasoline of high antiknock value and improving its straightrun gasoline and at present has in course of construction an alkylation plant at Avon for the purpose of making higher octane gasoline of aviation specifications at lower cost, thus improving the quality of its Associated gasolines and heating oils marketed on the Pacific Coast.

Pennsylvania Standard Wins Superhighway Contract

HARRISBURG, Pa., Apr. 22.—Standard Oil Co. of Pennsylvania was awarded the gasoline, oil, and restaurant concessions along the 160-mile-long Pittsburgh-Harrisburg express highway.

Chairman Walter A. Jones, of the state Highway Commission, said the company's bid "was over 100 per cent higher—that is, more favorable to the commission—than the next highest bidders, and greatly in excess of the other bids."

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THE MARKETS*

CRUDE OIL: Production in the United States fell off 3,734 bbl. per day in the past week to a total of 3,867,905 bbl. per day. Increases in Oklahoma, Texas and Illinois were more than offset by declines in California and Kansas. There was little change in other states.

REFINERY: The sounder position of the light fuels, indicated by higher postings on the East Coast, was emphasized by Standard of California in posting an increase of 15 cents a barrel for tank-truck deliveries. Though gasoline consumption is rising seasonally, the market lacks life. Kerosene and tractor fuels gaining. Natural gasoline extremely weak. Lubricating oils off in eastern market, but holding well in Mid-Continent. Wax softer.

TANK WAGON AND POSTED DEALER: Market unsettled in several areas. Scattering price changes effect local adjustments.

FINANCIAL: Unsettled market continued, the most pronounced irregularity being displayed by shares subject to influences of the European war. Several issues, however, scored new highs for the year. Average of 30 representative stocks for week ended April 20: High, 26.96; low, 25.69; close, 26.30. Week ended April 13: High, 27.21; low, 26.21; close, 26.37.

*Detailed information in market section.

ANNUAL REPORTS

		Net income	Earned per common share
British American Oil Co., Ltd.	1939	$3,903,915	$1.41
	1938	3,491,648	1.26
Amerada Corp.	1939	1,230,764	1.56
	1938	1,634,486	2.07
Honolulu Oil Corp.	1939	808,540	.81
	1938	940,268	1.01
Mountain Producers Corp.	1939	1,114,088	.70
	1938	989,807	.62
Total 71 companies†	1939	$228,965,364	
	1938	215,598,537	

†Including companies previously reported.

QUARTERLY REPORTS

	First quarter	Net income	Per share
Tide Water Associated	1940	$3,780,220	$0.50
	1939	1,234,182	.11
Atlantic Refining Co.	1940	3,123,000	1.12
	1939	538,453	.15
Shell Union	1940	5,314,158	.37
	1939	478,266	.00
Texas Pacific Coal & Oil	1940	179,691	.20
	1939	206,350	.23

PROGRAMS AND MEETINGS

Petroleum Industry Electrical Association Program at Dallas

The program for the convention of the Petroleum Industry Electrical Association convention at Dallas, Tex., May 1-3, follows:

Tuesday, April 30

8 p.m.—Directors' meeting.

Wednesday, May 1

9.30 a.m.—Open meeting.

Welcome: Ben Critz, vice president and general manager, Dallas Chamber of Commerce.

Response, D. W. Sims, president.

Report of president.

Roll call; reading of minutes; reports of committees and discussions.

1:30 p.m.—Open meeting.

"Development and Application of Private Automatic System," C. F. Ffolliott, technical director, Associated Electric Laboratories, Chicago. Discussion.

Message from A.P.I. Production Division, Carl Young, secretary, Dallas.

Message from P.E.S.A., G. G. Griffin, president, Houston, Tex.

Discussion of current problems.

Thursday, May 2

9 a.m.—Open meeting.

"Research in the Electrical Industry," Laurence A. Hawkins, executive engineer, General Electric Co., Schenectady, N. Y. Discussion.

"Fire and Causes of Explosions—Means of Extinguishing and Prevention," G. M. Kintz, U. S. Bureau of Mines, Dallas. Discussion.

Election of officers and selection of next convention city.

1:30 p.m.—Open meeting.

"Current Density Relationship in Cathodic Protection—Power-Transmission System for Cathodic Units," Gordon N. Scott, pipe line technologist, Los Angeles, Calif. Discussion.

7 p.m.—Annual banquet. Principal address by B. H. Markham, director, industries committee, American Petroleum Institute, New York. "A Program of Education and Action."

Friday, May 3

9 a.m.—(For P.I.E.A. members only.)

Installation of officers.

Appointment of new committees.

Petroleum Accountants Meet Next in Ponca City, Okla.

The April meeting of the Petroleum Accountants Society, to be held in Ponca City on Friday, April 26, will be designated as "Conoco Night." Members of the society associated with the Continental Oil Co., with Ed H. Loosley as chairman, will have charge of the program.

Entertainment during the day will consist of golf at the Conoco golf course; swimming at the Conoco gymnasium; and a 2-hour tour of the large and modern Conoco refinery at Ponca City.

Dinner will be served at 6:30 p.m. in Continental Associates Building. O. T. Peck will act as toastmaster and George F. Smith will deliver the address of welcome, both of whom are with the Continental. The Ponca City Glee Club will entertain.

"Covering the Oil Industry With Photography," will be the subject of an address by C. E. Fehrenbach, who represents the Continental in that field of the industry. Carl P. Thompson, of Oklahoma A. & M. College, will deliver a humorous address.

Armstrong Warns Gas Men About Federal Con'rol

NORMAN, Okla., Apr. 18.—W. J. Armstrong, chairman of the gas and oil conservation division of the Oklahoma Corporation Commission, in an address before the sixteenth annual Southwestern Gas Measurement Short Course on the University of Oklahoma campus, warned the 500 gas men present from 27 states and Canada that federal regulation of the oil and gas industry would set up an autocracy operating from Washington. He condemned the Cole bill, which he said "would give to one man an autocratic control over the oil industry, and permit him to issue rules and regulations regarding every oil and gas well in the United States and do it all without hearings of any sort."

If the Cole bill or a similar measure goes through, he said, "the little fellow in the oil and gas industry might as well give up and go back to farming." He warned the gas men that "the Government is about to take over the business now through its control of interstate gas pipe lines.

Pennsylvania Grade Crude Meeting at Bradford

W. F. Clinger, president of the organization, announces that the seventeenth annual meeting of the Pennsylvania Grade Crude Oil Association will be held June 20 and 21, in Bradford, Pa., at the Hotel Emery. In selecting Bradford for the meeting place, the association returns to that city for the annual convention for the first time since 1932.

Texas Company Honors I's Veteran Employes

Awards to employes who have completed from 25 to 30 years' service with Texas Co. were made April 11 at the annual dinner of the Texaco Service Club of Tulsa in the recreation hall at the West Tulsa refinery. T. J. Donoghue, of Houston, Tex., retired vice president, was guest of honor. He was on the first payroll of the company, was its first treasurer, and was in continuous service from 1902 until he retired July 1 last.

Other guests were B. E. Hull, president of Texas Pipe Line Co. and L. G. Moore, both of Houston; H. N. Pardee, manager of the producing department of the Oklahoma-Kansas division; and F. A. Stivers, vice president of the Texas-Empire Pipe Line Co. Judge J. H. Hill, counsel of the company in Tulsa and chairman of the club, presented the awards.

CALENDAR OF EVENTS

April

PENNSYLVANIA STATE COLLEGE, ninth Petroleum and Natural Gas Conference, State College, Pa., April 26-27.

May

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Dallas, Tex., May 1-3.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Hotel Bancroft, Worcester, N. Y., May 1-3.

NATURAL GAS SECTION, AMERICAN GAS ASSOCIATION, thirty-fifth annual meeting, Houston, Tex., Rice Hotel, May 6-10.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-second semiannual meeting, Statler Hotel, Buffalo, N. Y., May 13-15.

NATURAL GASOLINE ASSOCIATION OF AMERICA, annual convention, Hotel Tulsa, Tulsa, May 15-17.

INTERNATIONAL PETROLEUM EXPOSITION, Tulsa, May 18-25.

AMERICAN GAS ASSOCIATION, technical section, production conference, Hotel Pennsylvania, New York, May 20-22.

AMERICAN PETROLEUM INSTITUTE, midyear meeting, Fort Worth, Tex., May 27-31.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Hot Springs, Ark., May 30-June 1.

June

ILLINOIS-INDIANA PETROLEUM CONFERENCE, eighth annual meeting, Robinson, Ill., June 1.

NATIONAL ASSOCIATION OF PURCHASING AGENTS (Oil Company Buyers' Group) annual convention, Netherland-Plaza Hotel, Cincinnati, Ohio, June 3-6.

SOCIETY OF AUTOMOTIVE ENGINEERS, summer meeting, The Greenbrier, White Sulphur Springs, W. Va., June 9-14.

SOUTHWEST PETROLEUM CREDIT GROUP, San Antonio, Tex., June 17-20.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Milwaukee, Wis., June 17-20.

AMERICAN SOCIETY FOR TESTING MATERIALS, Chalfonte-Haddon Hall, Atlantic City, N. J., June 24-28.

September

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Spokane, Wash., September 3-5.

AMERICAN CHEMICAL SOCIETY, Detroit, Mich., September 9-13.

NATIONAL PETROLEUM ASSOCIATION, thirty-eighth annual meeting, Hotel Traymore, Atlantic City, N. J., September 18-20.

NATIONAL LUBRICATING GREASE INSTITUTE, annual convention, Stevens Hotel, Chicago, Ill., September 30-October 1.

October

AMERICAN GAS ASSOCIATION, Atlantic City N. J., October 7-10.

NATIONAL SAFETY CONGRESS, Stevens Hotel, Chicago, October 7-11.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, eleventh annual meeting, Dallas, Tex., October 16-18.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, annual convention, celebrating Texas oil's forty-fifth birthday, Fort Worth, Tex., October 31-November 2.

November

AMERICAN PETROLEUM INSTITUTE, twenty-first annual meeting, Stevens Hotel, Chicago, November 11-15.

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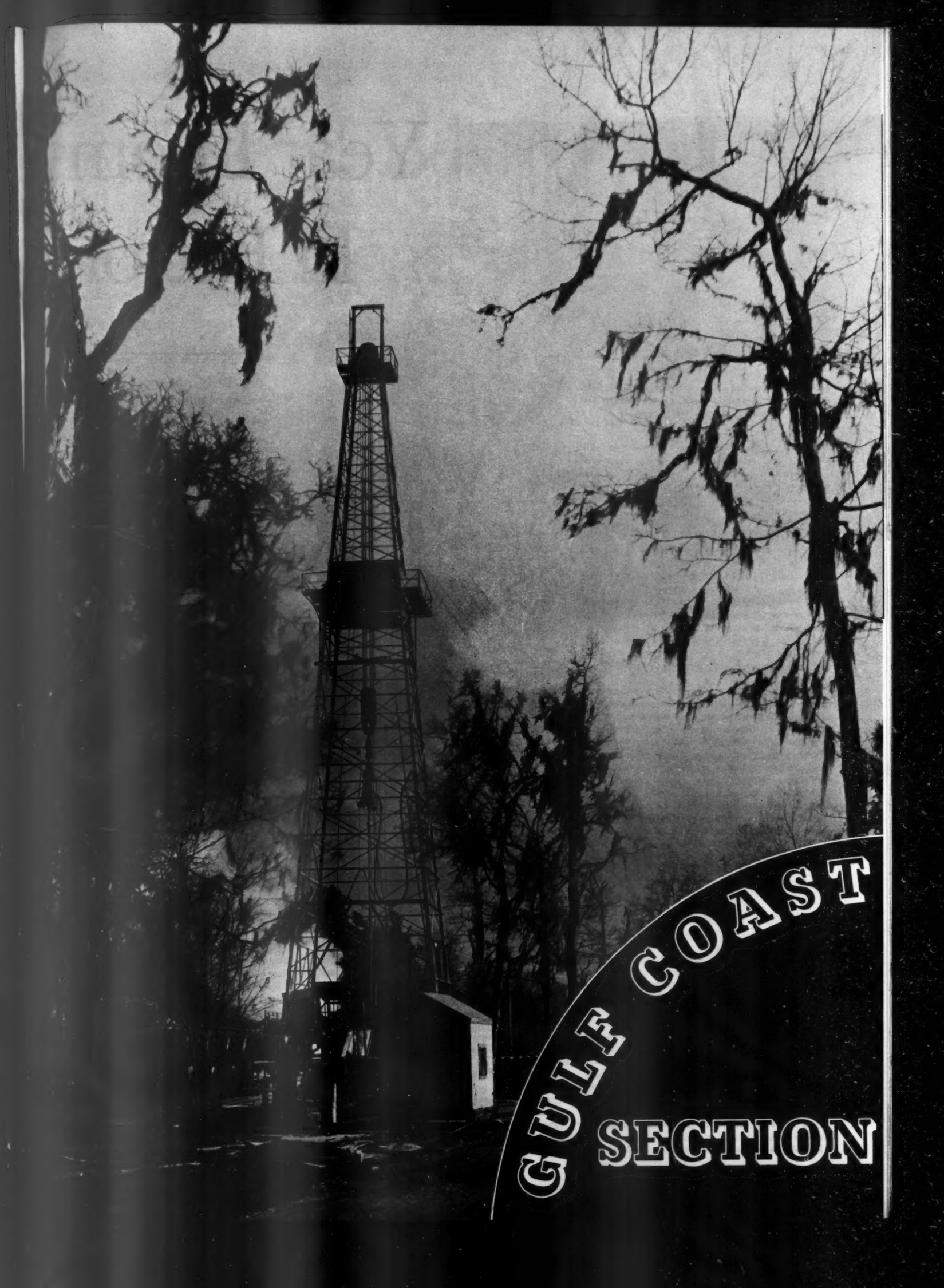
GULF COAST
SECTION

Year Looms In History

By NEIL WILLIAMS

Filling in the crater of a blowout well in the Greta field, Refugio County, Texas. The well, which was killed last November, ran wild for 3½ years

As 1940 advances into the second quarter, widespread activity is assured on the Gulf Coast for the remainder of the year. All branches of the industry share in the general program of expansion. Wildcat exploration seems headed for new highs, field expansion is aggressive, new recycling plants are springing up, refining is undergoing a steady growth and shipping facilities are being greatly extended

Above: New development in the Old Ocean field, Brazoria County, Texas, one of the outstanding deep-producing fields on the Gulf Coast

Right: Drilling-barge assembly of Lofland Brothers' new marine rig at Grand Lake, Cameron Parish, coastal Louisiana, as seen from its companion barge

WITH prospects for a general increase in wildcat exploration and field development over the Gulf Coast district in the next several months, a large-scale refinery expansion and modernization program under way, installation of recycling, pressure-maintenance and distillate-recovery plants spreading, and storage, shipping and other oil-handling facilities being extended, there is reason to predict that this year will end as one of the most active in the history of the area.

Although there has been some slackening of drilling activity in various areas and fields, general development over the district has been maintained. Despite the widespread exploration and development which has been carried on over a period of several years, potentialities for discovery of additional new reserves in the district are considered far from exhausted and continue to prove attractive for exploration.

Major construction and expansion programs are under way or have recently been completed at nearly all the large refineries of the district. Keeping pace with the requirements and demand for continued improvement in products and increased efficiency in operation, new units embracing the most modern processes are being provided. With Gulf Coast refiners it is a matter of constantly keeping pace with developments in refining methods, and hardly does one cycle of modernization go the rounds than the next is undertaken. Most plants on the Gulf Coast are in an almost continuous state of building.

Refinery Expansion

Refinery expansion this year will include the addition of another entirely new plant, marking the entry of Continental Oil Co. into the coastal refining picture. Construction of this plant, to be located at Lake Charles, La., is expected to be started in the near future.

Despite the fact that export trade has been greatly curtailed since the European war started, large volumes of oil continue to move from Gulf Coast ports. Refiners have been kept busy trying to supply the unprecedented demand for fuel and burning oils which has stimulated shipments to the Atlantic seaboard. Coastwise shipments of crude also are at high levels.

Additions to storage and loading facilities are being made at various places, with perhaps the greatest expansion being made by terminals at Corpus Christi. Storage and terminal capacity at that point has been materially increased within the past several months, with several large-size projects under way.

Probably the most interesting development in the district at the present time is the constructive development of potentialities of fields already discovered. While this development may be devoid of the spectacular appeal of exploration of new prospects and areas that pile up additional new fields, it is resulting in the consistent uncovering of reserves in extensions and new sands that until now have been passed over in the rush to virgin prospects. Several million barrels of additional reserves have been opened by this development during the past several months, and exploration around these older structures is being steadily increased.

Considering the fact that new reserves opened in the district during the first 3 months of this year are far ahead of last year's record, it is very probable that total reserves at the end of the year will exceed that of last year when a total of 44 new fields was uncovered.

Fields opened during the first quarter numbered 10, of which six are located in coastal Louisiana, three in the lower coastal area and one in the upper Texas Gulf Coast. These discoveries do not include the St. Charles area in Aransas County which was established as a potential discovery by a major blowout, or six other areas where wildcat tests were in the process of testing showings of oil and gas.

Drilling activity in coastal Louisiana is at its peak with concentrated drilling programs now under way at Villa Platte, Evangeline Parish; Eola, Avoyelles Parish; New Iberia, Iberia Parish; and

as One of Best of Gulf Coast

AND F. L. SINGLETON

at Golden Meadow in La Fourche Parish. During the past 2 years 38 new fields were added in this district, and most of them are still in the early stages of development. Most of the new fields are controlled by one or two companies which are carrying on consistent drilling programs expected to extend development over several years.

The widespread activity in the above district has resulted in the discovery of six fields so far this year, three of which are producing from sands below 11,000 ft. The discoveries include the Hayes field, in southern Jefferson Davis Parish, opened by Continental Oil Co.'s No. 1 Niblett Farms, completed at 11,604-24 ft.; the Erath field, southern Vermilion Parish, discovered by Texas Co.'s No. 1 Vermilion Parish School Board, completed through perforated casing at 11,378-88 ft.; Delta Farms, opened in La Fourche Parish by Tide Water Associated Oil Co.'s No. 1 Delta Farms, Inc., which is producing from perforated casing at 11,290-11,305 ft. Other discoveries are the Bayou Pigeon field in Iberia Parish, opened by Plymouth Oil Co.; the West Cote Blanche field, St. Mary Parish, discovered by Texas Co.; and the Neale field in Beauregard Parish, which was opened by Atlantic Refining Co. and is the second field in the district to produce from the Tertiary Wilcox formation.

In view of limited development the potentiality of these fields cannot be accurately measured, although the presence of multiple sands indicated by electrical surveys in several of the wells promises fields of major importance. Additional reserves were also added in the district by uncovering production around the flanks of two old known salt-dome structures at Anse La Butte, St. Martin Parish, and the Bayou Blue dome in Iberville Parish. New sands were also opened at Hackberry, Cameron Parish, and at Golden Meadow field in La Fourche Parish.

Above: General view of portion of the Sulphur field, Calcasieu Parish, coastal Louisiana. This is one of the old salt-dome fields. Union Sulphur Co. is the sole operator in the field

Left: A portion of the Lockport field, one of the older fields on the Louisiana Gulf Coast. Located in the swamps bordering on the Calcasieu River, elevated roadways had to be built

Circle: Loading an oil tanker at Barnsdall's dock, Corpus Christi. Shipping facilities are sharing in the general expansion noted in all Gulf Coast petroleum activities

Texas Coast Discoveries

On the Texas coast, new discoveries have been limited to one field, this being the Mackay distillate field in Wharton County, while on the lower Gulf Coast new pools were opened in Refugio County by Barnsdall Oil Co. at the Fagan ranch; the North Telferner field in Victoria County, opened by Colton & Colton's No. 1 Mahon; and the Thomaston area in De Witt County, discovered by Atlantic Refining Co., which opened the first Tertiary Wilcox production in the lower coastal area.

The addition of the new fields makes a total of 312 producing fields in the district. Eighty-nine of these are in coastal Louisiana, 118 are in the upper Texas coast and 105 in the lower Gulf Coast. As indicated in Table 1, which lists the number of discoveries by districts and years, most of the fields have been opened since 1934.

Since the opening of the first 10,000-ft. production on the Gulf Coast in 1937, deeper exploration has gained steadily and this phase of operation continues to be one of the most outstanding developments in this district. At the present time approximately 20 fields in the Gulf Coast are producing from sands at intervals from 10,000-13,000

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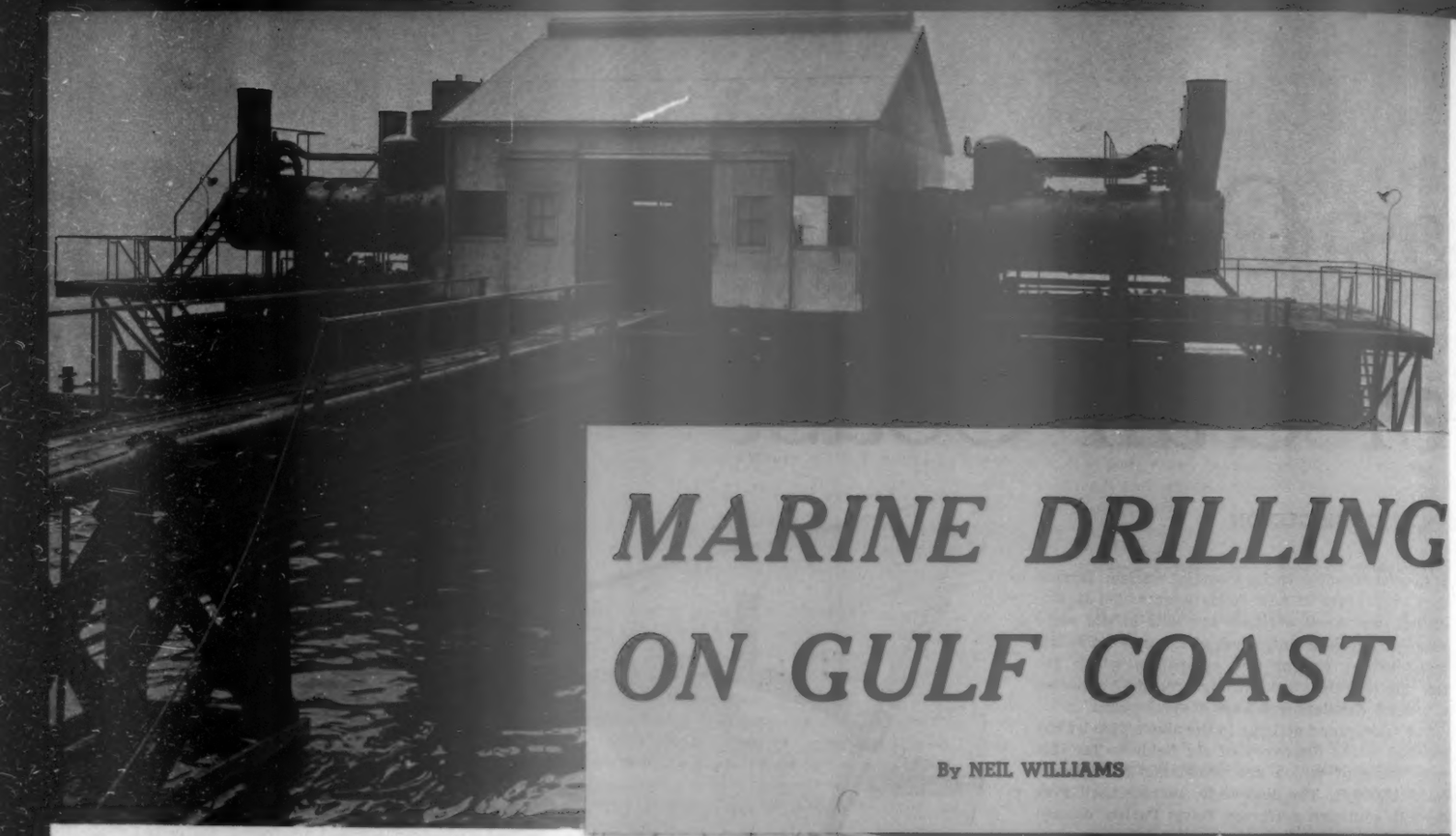

MARINE DRILLING ON GULF COAST

By NEIL WILLIAMS

Seen above is the boiler barge of Loffland Brothers new marine rig at Grand Lake, Cameron Parish, coastal Louisiana, as viewed from the drilling barge. Boiler-feed pumps, manifolds and controls are enclosed in the steel housing

Main draw works and engine of Loffland Brothers rig, Grand Lake, Cameron Parish, coastal Louisiana. Auxiliary draw works shown on opposite side

TWO of the largest and most completely outfitted marine rigs ever assembled on the Gulf Coast have been provided for the development of the Grand Lake (Mallard Bay) field, Cameron Parish, Louisiana. Designed to meet the greater requirements and emergencies occasioned by deeper drilling in water-located areas, and embodying various new features and advancements in facilities and accessories, these rigs are materially expediting development in this field, in which important production is being found in sands from 8,000 to 9,000 ft. deep.

Almost identical in size and general layout, these rigs are operating only a few hundred feet apart, presenting an unusual picture. One of the rigs, owned by Superior Oil Co., has been in service for the past 6 months, and now is on its sixth hole. The other, belonging to Loffland Brothers, drilling for Amerada Petroleum Corp., was brought in late in January, and is on its fourth hole. Both were assembled new especially for use in this field.

For the present these are the only rigs in the field. In this field Superior Oil Co., with Pure Oil Co. as a joint operator, and Amerada Petroleum Corp. are the sole operators, and each has planned a steady, orderly drilling program. Considering the prospective acreage, this is expected to keep these rigs active in this field for several years.

Location of the field is in Grand Lake, from which it gets its name, and Mallard Bay, an arm of the lake proper. This is a large semi-inland body of water, the bed of which is owned entirely by the State of Louisiana, from which leases of the operating companies originally were obtained. The dividing line between Grand Lake proper and what is known as Mallard Bay also separates the leases of the two operating companies, Superior's leases covering that portion of the field lying on the Grand Lake side and those of Amerada taking in the bed of Mallard Bay.

Opened in May 1939 the field now has 12 producing wells with 1 dry hole having been drilled. Piling foundations were provided for the rig used by Superior Oil Co. in drilling the discovery well. The second and third holes, the latter dry, were drilled directionally from the same structure. Since then the marine rig has been used by this company. Amerada Petroleum Corp.'s first two wells, one completed in October and the other in January, also were drilled from piling-supported structures.

Rigs Assembled at Beaumont

Both rigs were assembled originally at Beaumont, Tex., where the barges, including their superstructures, were built. However, as the large sizes of the barges preventing towing the rigs completely assembled through the Intercoastal Canal to the field, a distance of about 80 miles, the rigs were partially dismantled for the trip and then set up permanently after arrival in the field.

Essentially, the only differences in the two rigs are in the manufacture of some of the equipment, although on each are certain secondary accessory units and installation hookups not on the other. In addition, the boilers of the Superior Oil Co. rig are operated at slightly higher working pressures.

In assembly of the rigs special attention was paid to completeness and adequacy of equipment and facilities. Although in some instances, as in the case of the draw works, there may be slightly bigger types available, most of the installation is of the biggest, heaviest and most modern equipment in use. In provision of extra units and reserve equipment precautions have been taken to prevent any shutdown or delays at a critical time because of a breakdown. Important consideration also has been given to arrangement of equipment and the various units to insure ready accessibility and convenience of operation and control.

Barges upon which the rigs are assembled are the largest ever built for the purpose. Representative of the two is that of Loffland Brothers of which the drilling unit barge is 145 ft. long with an overall width of 72 ft., including the 8-ft. slot or space between the two twin hulls, each 32 ft. wide, that make up the drilling unit barge. Sides of the barge are 10 ft. in height. Except for the large size and heavier construction, this barge is of the same general design as other submersible barges now in use on the Gulf Coast. Each of the

twin hulls is partitioned into six water-tight compartments to facilitate submersing and floating of the barges.

The large size of this barge, covering an area of 10,440 sq. ft., including the space between the twin hulls, not only insures greater stability for the rig when the barge is submerged during drilling operations, but also provides more space on top for the accommodation of additional facilities and larger and heavier equipment to facilitate the handling of bigger loads. The extra height of the hulls allows for operation in deeper water, and adds to the stability and strength of the barge.

Located on the barge decks are the mud pumps, mud-conditioning and reserve-mud tanks, as well as various other special and auxiliary operating units. The mud system is one of the most complete ever provided for a marine rig. There are three 15½-in. by 8½-in. by 20-in. mud pumps, which are located at the back end of one of the twin hulls. As they are directly on the deck of the barge, they are surrounded by a water-tight steel wall, forming a pit, so that if the deck should ever be submerged, or water wash over it, they would be kept dry. The pumps are so manifolded that any or all of them can be operated, either singly or in series. The same pumps also are used for pumping water from the hulls to float the barge, the manifold including a hookup for this purpose. Controls are conveniently located on the derrick floor above.

on a mixing platform immediately above the mud-conditioning pits.

Included in the mud system are three of the largest and newest type shale shakers, each V-belt driven by a small steam turbine. Ordinarily two of these are operating at a time with the third serving as a stand-by. The shakers, located at one side of the barge in line with the overhead discharge line from the well, are elevated on a platform sufficiently above the level of the barge deck to permit flow of the mud through the steel mud ditch around the side and back of the barge to the mud-conditioning tanks. Refuse from the shakers empties directly into the lake.

Reserve Mud Tanks

Two reserve mud tanks are located on the barge deck at the front end, one on each of the twin hulls. Each is 40 ft. long and 27 ft. wide, having a capacity of 1,350 bbl. (2,700 bbl. for the two tanks). These are covered, serving as permanent racks for drill pipe and casing. There is ample space (approximately 10 ft.) on the barge decks in front of these reserve tanks for an emergency light plant and for welding equipment that have been provided, and for working space. Sufficient space also is left around the sides for walkways. Across the middle of the barge under the derrick floor, and between the reserve tanks and mud-conditioning tanks and pump pit there is large open space, providing ready accessibility to and working room around the blowout-preventer hookup, which is entirely in the clear.

Elevation of the derrick floor deck on a 15-ft. superstructure provides extra spacious clearance for working space, catwalks and walkways leading to the various operating units and for installation of the necessary operating and control lines without cramping. Every part of the barge below the derrick level is readily accessible both from below and above. The superstructure and derrick floor deck extends the entire width and more than half the length of the barge back of the reserve mud tanks and pipe racks, covering in addition to the space immediately under the derrick floor, the mud pump pits and the mud-conditioning tanks. Constructed of extra heavy and large steel beams, the main members being 36-in., wide-flanged I-beams, more than ample support is provided for even the greatest loads the barge might be called upon to handle.

On the derrick-floor deck there is space not only for the derrick floor proper and the engine rooms, which extend the entire width of the barge, but also for roomy living quarters for the crew and a geological laboratory on one side, and a warehouse on the other, with a large working space between the back of the derrick floor. This is entirely enclosed except the front or V-side of the derrick with corrugated iron. The living quarters, warehouse, and working space behind the derrick floor are roofed over.

The rig has a double draw-works hookup, including a large unit for regular use and a smaller one for auxiliary purposes and emergency use.

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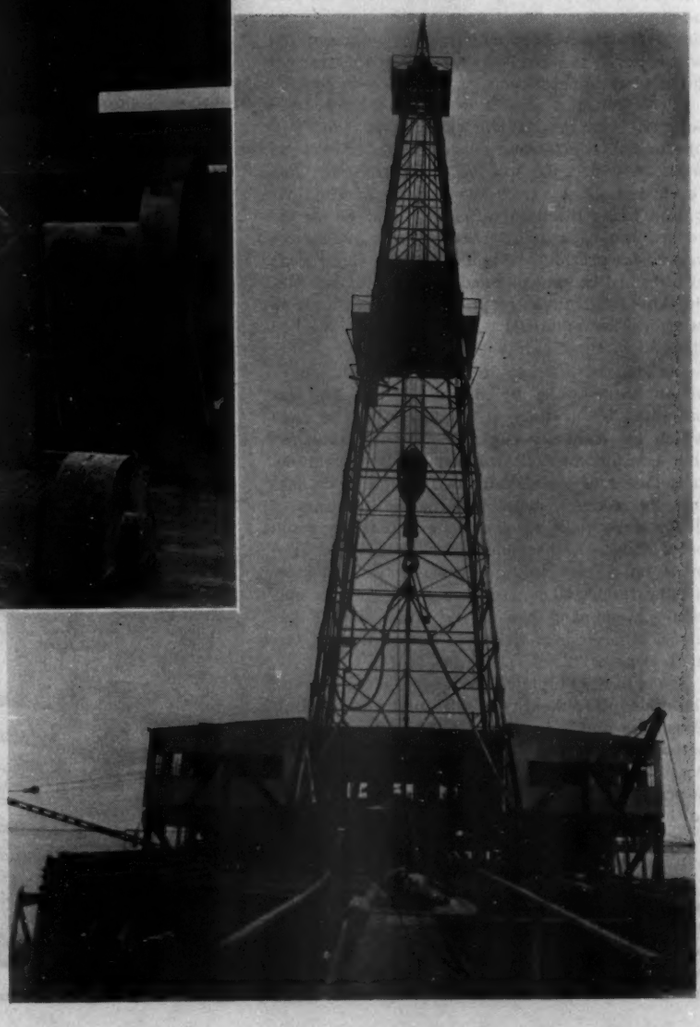


Two mud tanks, one a suction pit and the other a mud-conditioning pit, with connecting partitions and gates, are located on the end of the other twin hull, opposite the mud pumps. Each of these is 36 ft. long and 15½ ft. wide with a capacity of 600 bbl. By closing or opening the connecting gates and baffles these can be operated separately or together. Outlets of the suction tank, which is located on the inside and directly across the slot (open space between the twin hulls) are along the bottom of the tank at the approximate level of the pump suction, permitting gravity flow to pump suction. Heavy-duty hose connections are used across the slot linking the outlets from the suction pit with pump suction lines at the pump-pit wall. Mud materials and chemicals are stored

***Above:** Derrick floor of Lofland's new rig, showing main draw works and crew making rathole connection*

***Right:** Lofland's new drilling barge and rig as seen from the deck of its companion barge. Main draw works and engine are set up in the steel housing at the right, back of which is the storeroom. Auxiliary draw works and living quarters are at left*

Union Sulphur Co.'s gas-lift plant in the Sulphur field, Calcasieu Parish, coastal Louisiana

Experimental Gas Lift at Sulphur Effective in Recovering Oil

UNION SULPHUR CO., since October 1938, has been carrying on experimental gas-lift operations at its Sulphur Mines field, located north of Sulphur, Calcasieu Parish, coastal Louisiana. The success of the project in effecting additional economical recovery of oil from wells in which the limit of commercial productivity by other means was believed to have been reached has more than justified the operations.

Wells for the gas-lift operations have been selected because of their exceptionally difficult production conditions. All of them have been wells in which the encroachment of water had reached a point where the volume of fluid required to be lifted to recover the oil either exceeded the capacity of existing lifting practices or was not profitably feasible. Most of these wells already had been abandoned so far as further production from their respective sands was concerned. The remainder soon would have reached the end of their pumping life.

Decision to attempt to further production of oil in these wells by means of gas lift was prompted by a study of conditions in the field which led company engineers to the conclusion that considerable oil, trapped by the rapid encroachment of water, remained in the sands, and that its recovery could be effected if means of lifting large volumes of water economically could be provided. Experiments with air lift had been made on certain wells, indicating the ability to lift the fluid, and it was considered that the success the company had in the application of gas lift in other coastal fields warranted trial of this method here.

Sands in the Sulphur field, as is the case around the other piercement-type salt domes on the Gulf Coast, are highly lenticular and broken, and have active water drives. Under these conditions it is possible for wells in which pumping no longer is practical, due to excessive water encroachment, to have relatively high bottom-hole pressures. This has been an important factor in the efficient application of gas lift in these wells at Sulphur.

It should be mentioned that wells in this field have unusually short flowing lives. The early appearance and rapid encroachment of water in wells in most sections of the field result in placing wells on the pump shortly after their completion in most instances. With the large volume of water to be moved pumping has been a major item.

In a section on the north side of the dome a condition exists, however, in which the bottom-hole pressure of the wells may drop to below 150 lb. before water makes its appearance. Such an area lends itself to pumping, and so far the company has no intention of extending gas-lift operations to that part of the field. On the other hand, pumping units salvaged from the wells placed on gas lift in high water-producing areas are being retained for installation on these low-pressure pipe-line oil wells.

The gas-lift plant includes two Ingersoll-Rand Types 6xVG-2, 9 by 9 and 5 by 12 combination low and high-pressure compressors, operating in parallel. Each is rated at 225 hp., a total of 450 hp. for the plant. The engines can be run at 350 r.p.m. at maximum load, but the speed of this type unit can be slowed for reduced loads.

Only one unit was installed at the beginning. So successful, however, was the result of the initial gas-lift operation, which embraced from five to six wells, it was decided to place additional wells on the lift, and to provide the needed additional gas capacity, the other unit was installed. It was placed in operation May 19, 1939.

Since then as many as 11 wells have been

TABLE 1—SULPHUR GAS-LIFT WELL RECORD

Well—	Total depth (ft.)	Casing size (in. o.d.)	Tubing size (in.)	Volume input gas daily (M. cu. ft.)	Input pressure (lb. sq. in.)	Total fluid lifted daily (bbl.)	Oil lifted daily (bbl.)
722 fee	5,431	5	2	190	650-700	1,280	48
723 fee	3,250	7	2½	170	650-700	528	23
749 fee	3,389	7	2½	675	650-700	2,400	46
776 fee	4,771	7	2½	200	650-700	1,740	41
779 fee	3,300	5	2½	170	650-700	800	36
786 fee	5,170	9⅝	2½	end well	650-700	2,400	26
847 fee	5,130	7	2½	off prod.	650-700	....	..
848 fee	4,941	7	2½	200	650-700	1,700	34
864 fee	4,635	7	2½	75	650-700	1,728	32
2 Noble	5,137	9⅝	*2½	75	650-700	....	..

*One-inch inside 2½-in. tubing.

Pressure and volume-control installation on injection gas line to well. Separate installation provided for each well

placed on the system, although only nine wells are on the gas lift at this time. The compressors are now operating at upwards of their maximum load capacity, and as additional wells are placed on gas lift, which is expected to be done as rapidly as pumping of wells becomes unprofitable, other units will have to be installed.

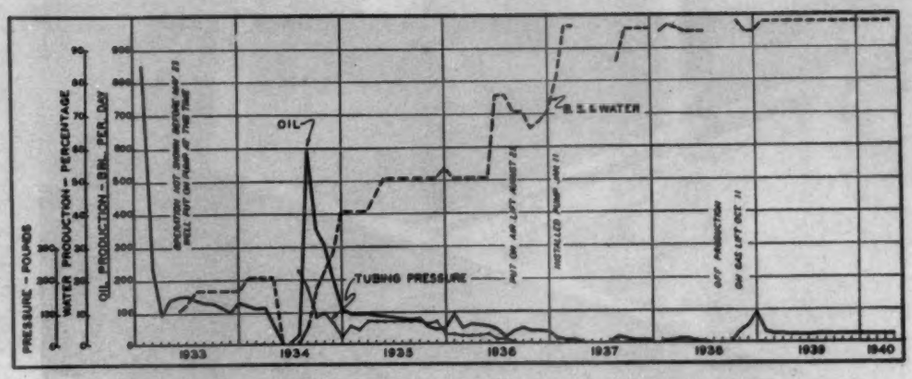
Except for the first 3 or 4 days of the plant operation, when use of outside gas was necessary to build up required volume of gas in the lines and casing, sufficient gas has been produced continuously not only for the lifting of the fluid but also for engine fuel, with a surplus for field use. This efficiency has been due to conservation and utilization of the gas to obtain the greatest fluid recovery for the least volume of gas required for injection, and has been accomplished primarily by surface control of pressures and gas-input volume. Volume and pressure controls are mounted on the line to each well and can be set at any desired volume and pressure to be determined by the conditions in the individual well. To take care of any excess pressure in the line, the pressure control of one well, designated as end well, is left open, to maintain proper balance and pressure in the system.

As now controlled, input gas for the nine wells totals approximately 1,755,000 cu. ft. daily (Table 1), which is lifting approximately 9,245 bbl. of fluid, of which from 275 to 280 bbl. of net oil is being recovered. The input requirement of individual wells ranges from about 75,000 cu. ft. to around 200,000 cu. ft. daily, except one well into which 675,000 cu. ft. is injected (Table 1). Input pressure is controlled at from 650 to 700 lb.

Production of all wells is run to a common separator, from which overhead gas is taken to compressor suction at a pressure of 25 to 30 lb. In two stages this pressure is boosted to 700 lb. at discharge, first 30 lb. to 200 lb. in the low-pressure cylinders and then from 200 lb. to discharge pressure in the high-pressure cylinders.

An analysis of the production of the gas-lift operations by months for 1939 and 1940 through March is summarized in Table 2. Total oil recovery to April 1 was 153,072 bbl., of which it is estimated that at least from 85 to 90 per cent represents oil that would not otherwise have been recovered. This has more than paid out the initial investment which totaled around $42,500 of which $35,000 was for the plant proper and $7,500 for lines, gas-lift valves, orifices meters, etc. The investment for the system amounts roughly to $100 per horsepower of the compressor plant.

Pumping units and equipment formerly on the wells now on gas lift have been salvaged 100 per cent to be used on wells that are put on the pump in the future. This is expected to result in a saving in future pumping-equipment investment that will offset to a large extent the initial cost of the gas plant.



Oil production in barrels per day. Water curve is in percentage of water production

Operating and overhead costs have been held to around 17 cents per barrel of oil recovered. Contributing to this low cost has been the fact no gas has had to be purchased since the plant started, and through efficient operation compression costs have been held around 2 cents per 1,000 cu. ft. of gas handled. Also at present the plant is making about 50,000 to 60,000 cu. ft. of gas in excess of the combined requirements of lifting oil and engine fuel. This surplus has been available for general field use. Operation of the

(Continued on Page 255)

Above: Compressor installation of Union Sulphur Co.'s gas-lift plant in the Sulphur field, Calcasieu Parish, coastal Louisiana

TABLE 2—PRODUCTION ANALYSIS SULPHUR GAS PLANT

Daily Average Per Month 1939-40

Month—	No. wells	Gas input (M.c.f.)	Oil (bbl.)	Fluid (bbl.)	Bbl. fluid per M.c.f. gas	Bbl. fluid per bbl. oil
January 1939	6	972	193	6,089	6.3	31.6
February 1939	5	928	164	5,524	6.0	33.7
March 1939	4	1,006	270	5,532	5.5	20.5
April 1939	4	737	226	5,718	7.8	25.3
May 1939†	6	1,375	303	8,105	5.8	26.7
June 1939	8	1,666	523	9,137	5.5	17.5
July 1939	8	1,729	473	9,311	5.4	19.7
August 1939	8	1,570	440	9,888	6.3	22.5
September 1939	8	1,636	329	8,528	5.2	25.8
October 1939	*9	1,798	283	10,981	6.1	38.9
November 1939	*11	1,868	332	12,152	6.5	36.7
December 1939	*11	1,790	270	10,498	6.1	38.9
January 1940	*10	1,575	221	7,325	4.7	33.1
February 1940	*8	1,334	268	8,292	6.2	30.8
March 1940	9	1,709	280	9,245	5.4	33.1

*Nine wells in October include No. 847 fee, placed on production 10-26; 11 wells in November include No. 779 fee, placed on production 11-10 and No. 2 Noble on 11-8; in December wells No. 773 fee off 12-3, No. 847 fee off 12-10 to 12-22; January wells No. 722 fee on 1-16, No. 748 fee off 1-17 and No. 847 fee off; February No. 847 fee produced 2-9, 10 and 11.

†Second unit put in operation May 19.

TABLE 3—SULPHUR MINE GAS-LIFT PLANT

March 1940

Date—	M.c.f. gas compressed	Lb. sq. in. discharge pressure	Hours operated	Total oil produced	M.c.f. gas returned	Plant fuel M.c.f.
March 1	1,685	770	24:00	293	260	120
March 2	1,654	775	24:00	294	175	120
March 3	1,665	780	24:00	304	293	120
March 4	1,619	775	24:00	334	276	115
March 5	1,715	770	24:00	327	337	120
March 6	1,755	765	24:00	336	396	120
March 7	1,720	765	24:00	331	365	120
March 8	1,867	765	24:00	310	350	125
March 9	1,829	770	24:00	308	414	125
March 10	1,945	765	24:00	304	474	125
March 11	1,857	760	24:00	268	329	115
March 12	1,710	760	24:00	277	314	120
March 13	1,807	765	24:00	167	297	120
March 14	1,910	750	24:00	275	423	120
March 15	1,764	740	24:00	251	356	110
March 16	1,868	755	24:00	250	357	120
March 17	1,765	755	24:00	264	419	115
March 18	1,780	745	24:00	272	336	115
March 19	1,749	735	24:00	321	244	115
March 20	1,760	730	23:45	280	170	115
March 21	1,720	720	24:00	271	127	115
March 22	1,810	715	24:00	276	254	120
March 23	1,691	705	24:00	261	205	115
March 24	1,615	715	23:30	254	216	115
March 25	1,495	790	24:00	250	273	120
March 26	1,424	745	24:00	240	264	110
March 27	1,629	750	24:00	247	232	115
March 28	1,519	765	24:00	249	153	115
March 29	1,891	760	24:00	262	209	125
March 30	1,588	760	24:00	287	178	115
March 31	1,174	715	24:00	218	154	100
Total	52,980		743:15	8,681	8,350	3,640

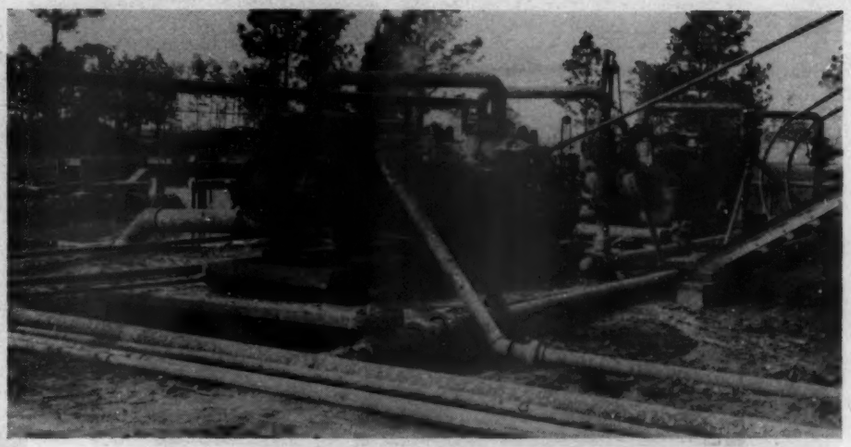
Production last month, 7,799 bbl. Production to date, 153,072 bbl.

Up-to-Date Drilling Operations Seen On the Gulf Coast

WITH 175 wells exceeding a depth of 10,000 ft. within the past year, bringing the total number of deep tests completed or still active to almost 350, the Gulf Coast of Texas and Louisiana presents the most spectacular drilling scene in the nation. Deep drilling has demanded stronger derricks and rigs and development of methods to overcome many difficulties which hamper operations below 8,000 ft. In addition many shallower fields, each of which presents a particular problem in itself, are being exploited. Many of the drilling sites are as unusual as the equipment and techniques developed, with long causeways extending out into many of the bays and inlets, huge barges for drilling sites in the Gulf of Mexico, canals dredged through the bays and swamps so drilling equipment can be moved to the location on barges, and miles of board roads through the fields located in the lowlands.

Above: View from across the mud pits of the pumps on a rig at work on the northeast flank of the Jennings field, Acadia Parish, Louisiana. Right: One of the many board roads which wind their way through the Old Ocean field in Brazoria County, Texas. It would be impossible to reach the drilling locations without them

Opposite Page: (Upper Left) An under-the-floor drive for the rotary table on Phillips Petroleum Co.'s big rig in southern Cameron Parish, Louisiana. (Lower Left) A short causeway running out into Nueces Bay to a drilling well. When the longer causeways are built, the boilers are moved from the shore to piling close to the derrick. (Lower Right) Gulf Refining Co.'s No. 2 Arnaudet, deep test on the northeast flank of the Jennings salt dome, Acadia Parish



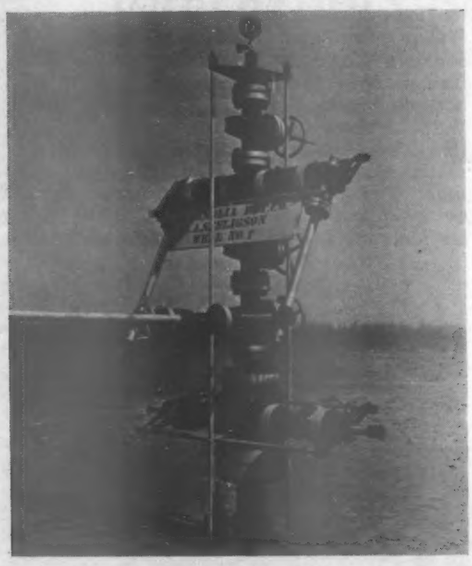
Above: View of mud-pump hook-up from derrick floor. Note the pumps have no air chambers; also the extensions on the throttle valves which allow control of the pumps from the derrick floor. Left: Boilers and boiler-feed hook-up on a well near Lake Charles, Louisiana. The generators, fuel regulators and water-feed pumps are mounted on separate skids to facilitate moving

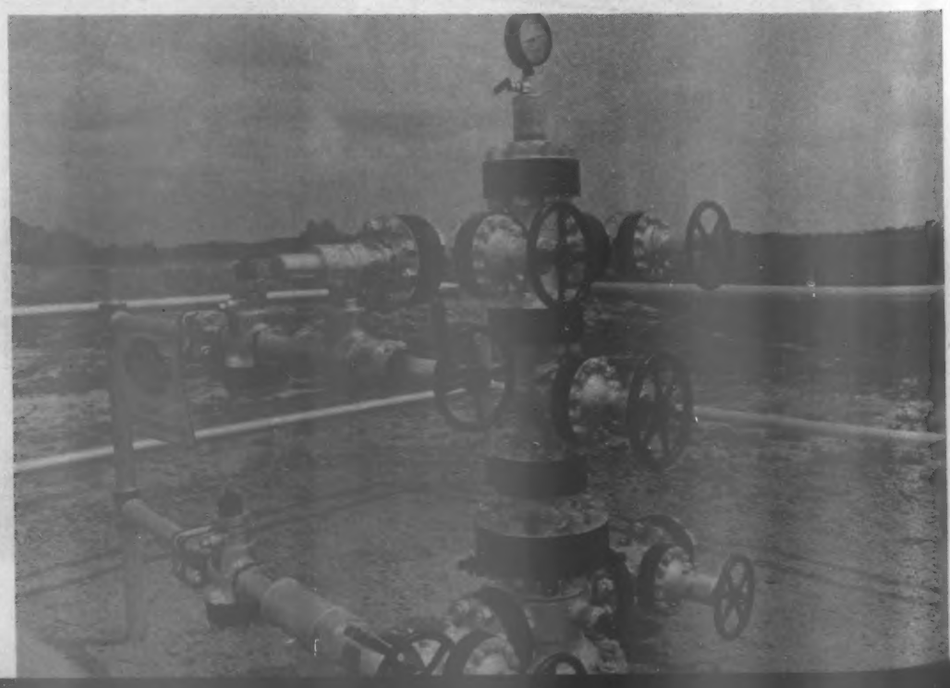
Typical G

Left: Twin wells on Calcasieu Oil Co.'s (Union Sulphur Co.) lease in the East Hackberry field, Cameron Parish, Louisiana. Note the difference in the hookups and the stairway which permits access to the control valve on the well at the right

Above: Double christmas-tree hookup on a well surrounded by water and owned by the Union Sulphur Co. in the East Hackberry field, Cameron Parish, Louisiana

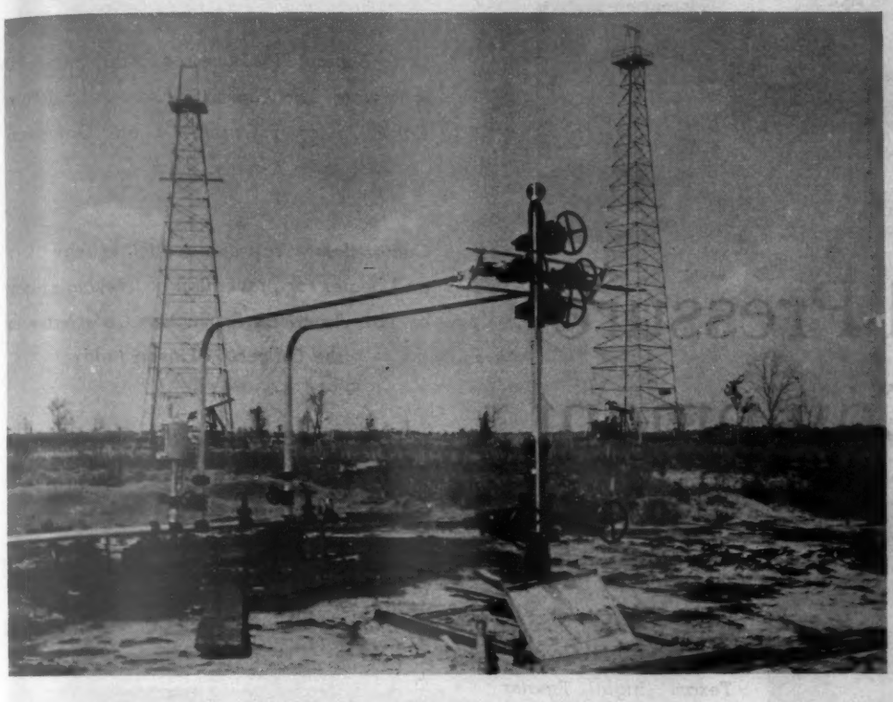
Below: Well hookup used in the East Premont field, Jim Wells County, Texas. The field has unusually high pressures





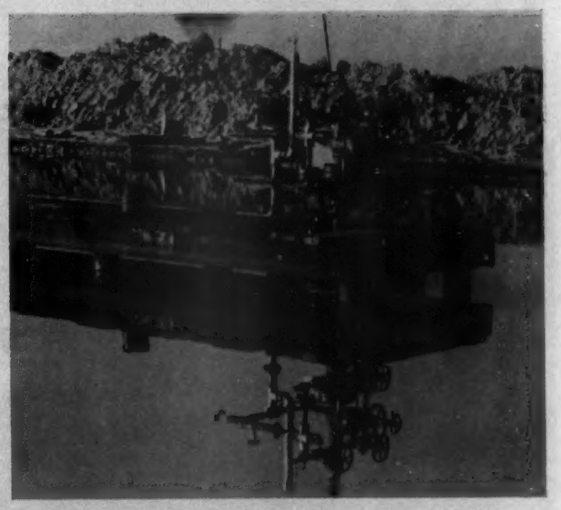
Right: High-pressure hookup on the Union Producing Co.'s No. 1 Daniels in the North Houston field. The tubing-pressure gage shows 2,500 lb. per sq. in.

Gulf Coast Christmas Trees



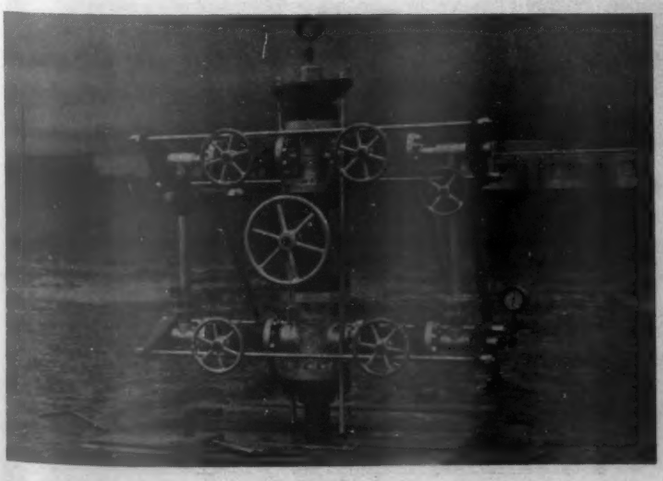
Above: Flowing-well hookup, with two lines coming from the tubing, in use in the New Iberia field, Louisiana Gulf Coast

Above Right: High-pressure hookup in the Old Ocean field. Production is from 10,000 ft., with 5,000-lb. per sq. in. pressure

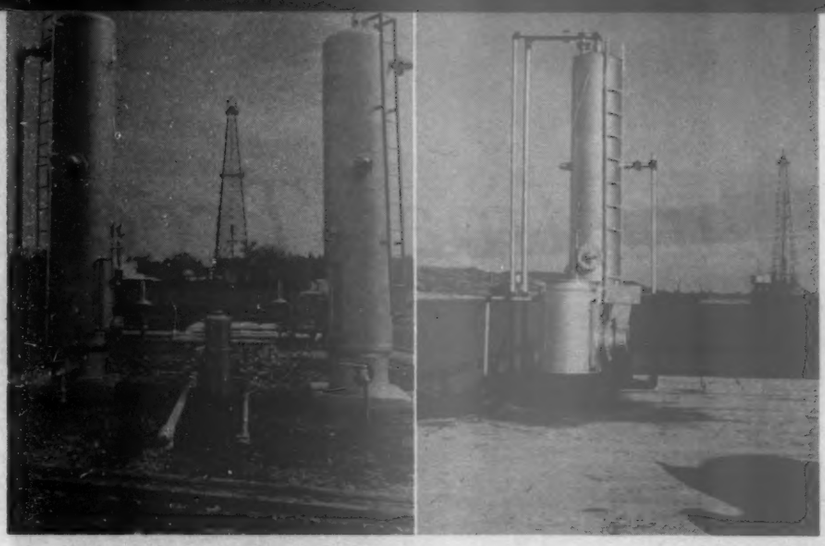


Right: Completed well in a canal in the Chalkley field, Cameron Parish, Louisiana. The wells are drilled from barges and the walkways are built for the production men

Below: Completed-well hookup on a Wilcox sand well in the Eola field, Avoyelles Parish, Louisiana



Below Right: Fence for protecting well connections from debris when flood water covers the lowlands



Treating and Pressure-Reduction Equipment

Left Center: Moisture trap and gas cleaner on a distillate well belonging to Atlantic Production Co. in the Dickinson pool

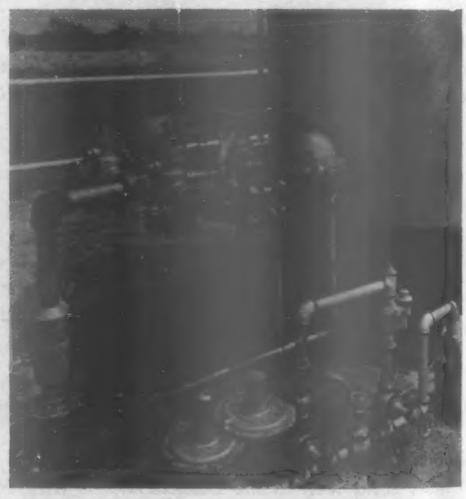
Left Bottom: Pressure-reduction manifold, with water knockout in background, on Pure Oil Co.'s No. 1 Cassia Dobbie, Galveston County, Texas

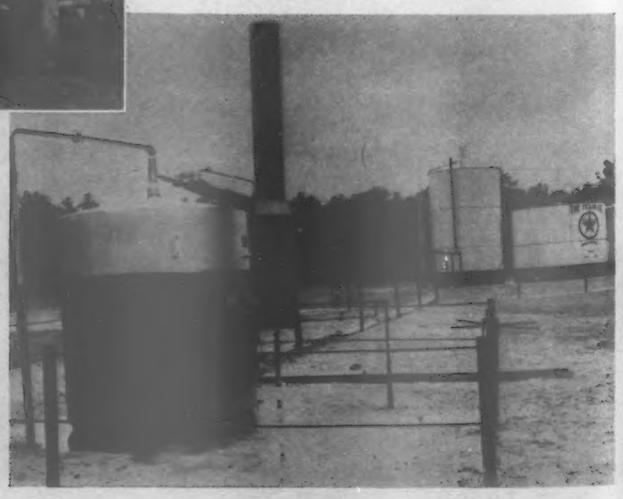
Center Below: Pressure-reduction regulators and heater for prevention of freezing of gas on Pan American Production Co.'s lease in the Gilloco-Dickinson field

Immediately Below: Control manifold with high and low-pressure regulators for furnishing domestic gas direct from the well

Bottom Right: Hot-water treating system for breaking emulsions in the Conroe, Tex., field

Top of Page (Left): Twin separators and regulator for reducing the well pressure in Old Ocean field, Brazoria County, Texas. (Right) Treater and separator in the Nueces Bay, East White Point field, Texas

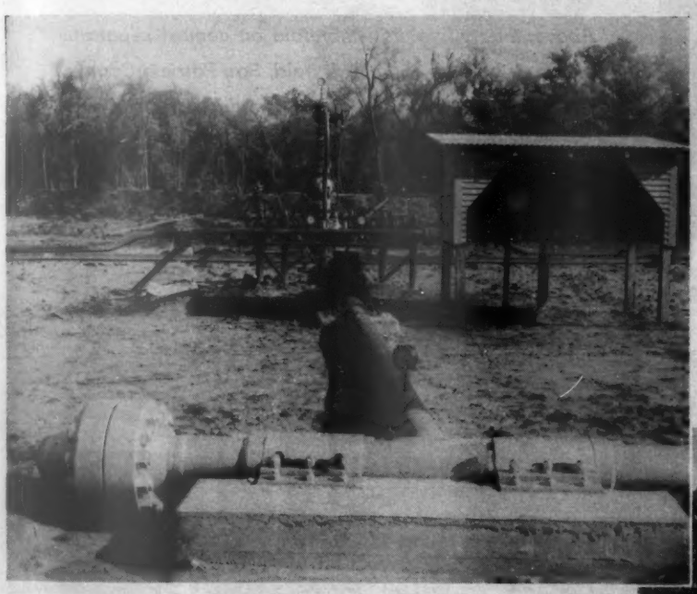




Recycling Views On Gulf Coast

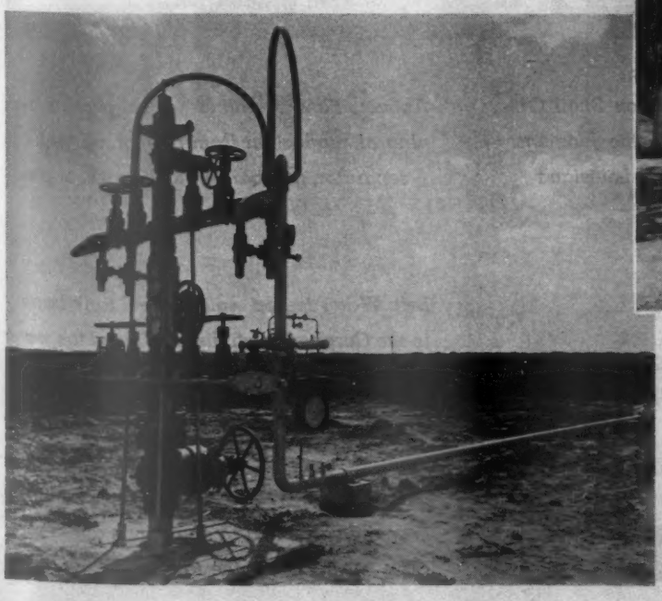
Above: General view of the Coastal Recycling Co.'s plant in the Agua Dulce field, Nueces County, Texas. This plant went into operation the latter part of December 1939

Above: Separator installation for recycling operation of H. H. Harrell in the Bammel field; compressors for boosting the pressure are in the background



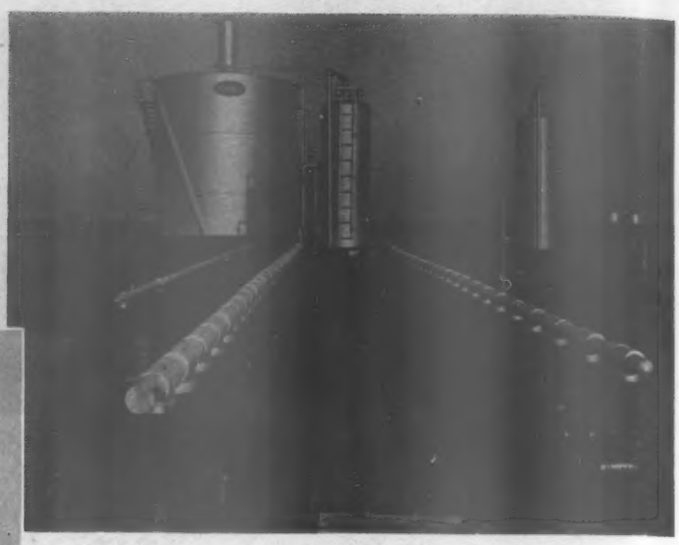
Above: High-pressure injection well for recycling on Harrison & Abercrombie's lease in the Old Ocean field, Brazoria County, Texas

Above: Compressors used in the recycling plant of H. H. Harrell in the Bammel field, Harris County, Texas



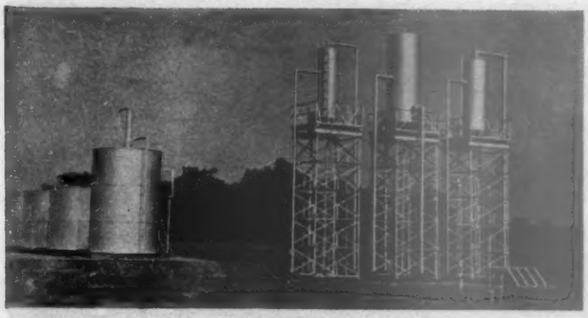
Left: Input well hookup for recycling in the Agua Dulce field, Nueces County, Texas. There are six recycling projects in operation in the field

Tank Batteries And Separators



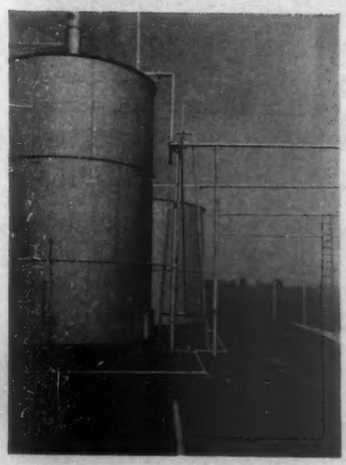
Above: Thirty-five well manifold on central separator and tank battery in the Taft field, San Patricio County. The design of the manifold is standard on this company's leases and this is one of the largest installations

Above: Flow lines and separators on a row of closely spaced wells in the J. A. West subdivision, East White Point field, Nueces County, Texas



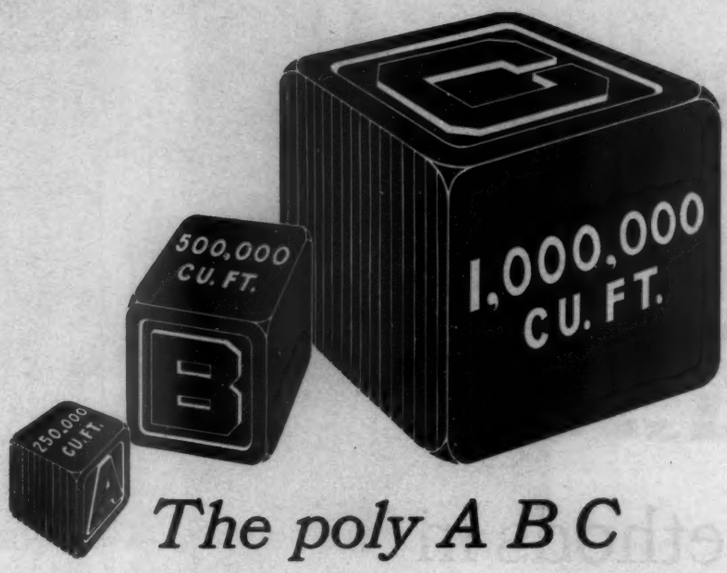
Above: Elevated separators on Shell Oil Co., Inc.'s Conover lease in the Jennings Dome field, Acadia Parish, Louisiana

Above: Flow manifold which permits running of production from any or all wells to separator, gun barrel, stock tanks, or pits



Left: Water leg on welded steel tank battery in the Corpus Christi district. Use of the water leg is a substitute for a gun-barrel tank

Extreme Left: Water level in the gun barrel is easily controlled by the winch at the right of the tank



The poly A B C

Universal has developed three standard-sized U.O.P. catalytic polymerization units to make high octane polymer gasoline from cracked gas—sizes A B and C

Size A is designed to process 250,000 cubic feet of gas per day—suitable for cracking plants making up to 500 barrels of gasoline

Size B is to process 500,000 cubic feet per day—for cracking plants making up to 1000 barrels of gasoline

Size C charges 1,000,000 cubic feet—suitable for cracking plants producing 2000 barrels per day

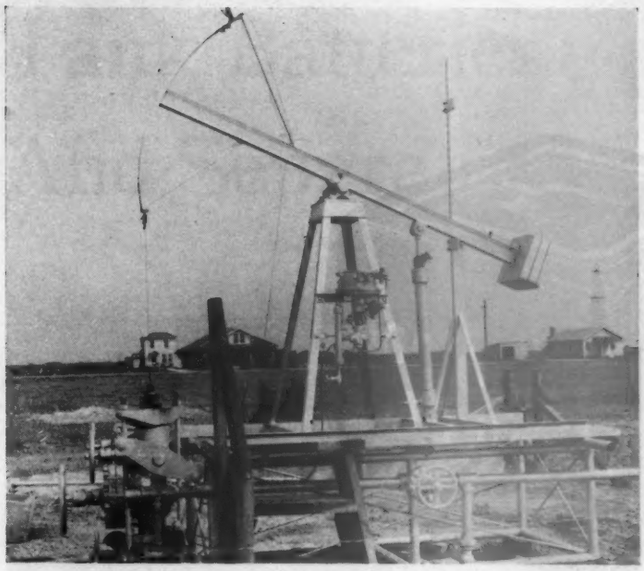
Construction is rapid, cost is low, profits are remarkable

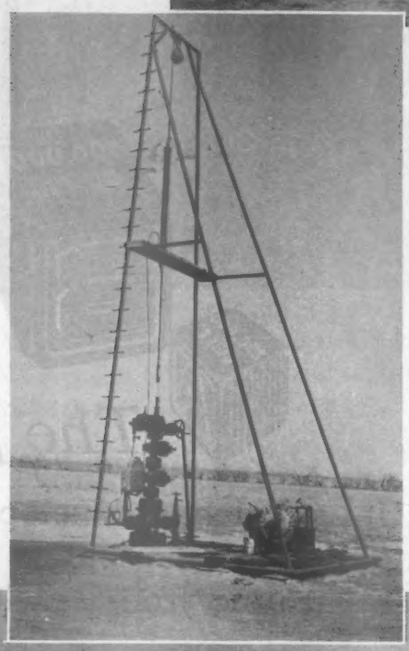
There's a U. O. P. catalytic poly plant just right for your cracking plant—if you have one

You ought to have both

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor



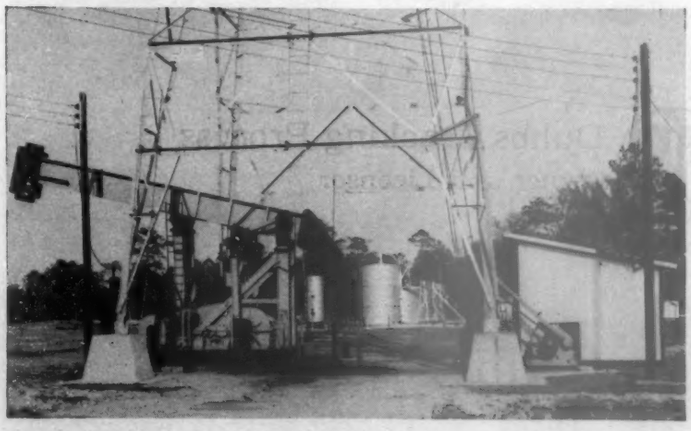


Lifting Methods in Coastal Fields

PRACTICALLY every producing condition is encountered in the Gulf Coast because of its wide area and the multiplicity of pay formations. Often one field will be producing from pay zones at depths ranging from 4,000 to 10,000 ft. and pumping wells, gas-lift wells, and flowing wells will be only short distances apart. Due to the great depths and the amount of fluid which must be handled, gas lifts are finding wide application. After the production declines, intermitters are used and further declines call for pumping units.

Long-stroke jack used for pumping wells in the Fannett, Tex., pool. Note that these wells are equipped with permanent electric servicing units

Top left: Intermitter for regulating flow of gas lift in the Dickinson pool, Galveston County, Texas



Top Right: Four-well hookup in use in the Samfordyce field of Hidalgo and Starr counties, Texas

Center Above: Surface equipment for intermittent injection in La Gloria field, Jim Wells County, Texas. The gas for injection is produced from distillate wells in the same field

Above: Back-side crank, stroke jack, and pumping jack used to pump two wells in the South Houston field

Drilling on Gulf Coast

Left: Mud-pump installation on Lotland Brothers' new marine rig at Grand Lake, Cameron Parish, Louisiana. The pumps are located on the barge and are protected by a steel wall; the derrick floor is overhead

Under-the-floor rotary-table drive used on a drilling barge. A portion of the blowout preventer can be seen at the extreme right

Above: Boiler-feed pump, manifold, control valves, and gages on barge for marine drilling

Right: View under the derrick floor of drilling barge, showing the mud-conditioning tanks. The suction of the mud pumps seen at the right

Drilling Play Reflects Activity Near Gulf Coast Salt Domes

NEW sands and productive areas being opened at many of the old salt domes on the Gulf Coast are inspiring increased interest in the productive potentialities of all salt domes. With this, incentive is being provided for continued exploration around these domes, which is being reflected in the active drilling play that is going on.

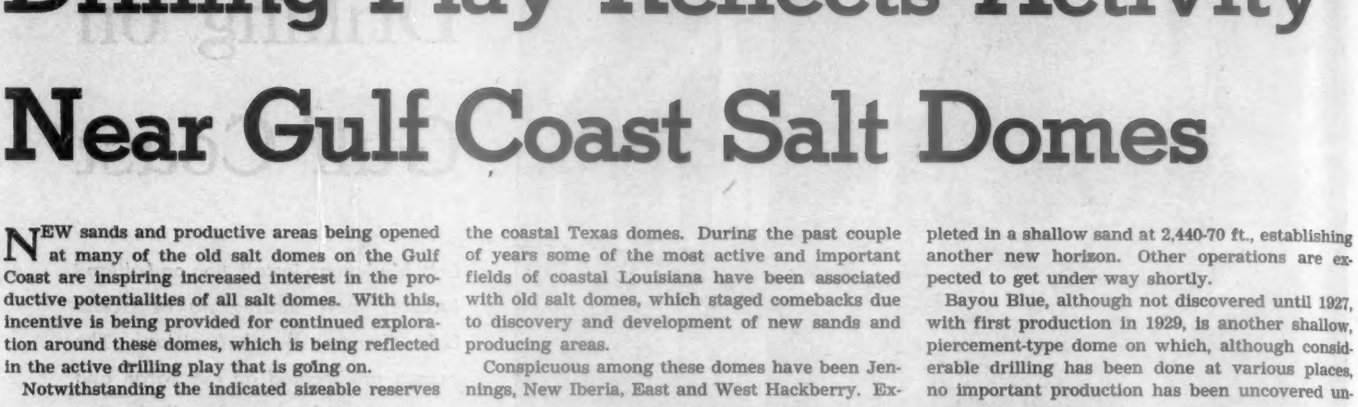
Notwithstanding the indicated sizeable reserves of various other types of fields and structures that have been found on the Gulf Coast in the widespread exploration of recent years, the old domes still are counted on to supply a substantial portion of the district's future oil production. That many of these domes already have been prolifically productive or unsuccessfully exploited has not eliminated them as remaining major potential reserves.

It has been a significant fact that regardless of what drilling has been done on them or how productive any of these domes have been, none is ever considered condemned or exhausted of potentialities for additional exploration and development. Due to the diversity of possible productive sectors on and around these domes, and their multiplicity of sands and producing conditions, the way is always open for further exploitation.

Productive potentialities of old salt domes are indicated in the record of the Jennings (Evangeline) field, Acadia Parish. Although the oldest field in coastal Louisiana, and on the entire Gulf Coast second in age only to Spindletop, whose discovery it followed only by a few months, Jennings today is by a sizeable margin the largest producing field on the Louisiana coast. On the Gulf Coast as a whole it is exceeded in daily production only by Conroe, Hastings and Tomoconnor, each of which covers several times the area of Jennings.

Much of the attention at present is focussed on domes of the Louisiana coast although consistent drilling programs are being carried on at many of the coastal Texas domes. During the past couple of years some of the most active and important fields of coastal Louisiana have been associated with old salt domes, which staged comebacks due to discovery and development of new sands and producing areas.

Conspicuous among these domes have been Jennings, New Iberia, East and West Hackberry. Except for East Hackberry, which was not discovered until 1927, these are among the oldest known domes on the Gulf Coast, and each has experienced several different drilling plays. However, despite the extensive exploration and development which has been undergone on these domes, active drilling still is under way on each, not only in extending present productive sands but also in exploitation of possible additional horizons and other productive areas.



Portion of the Old Hackberry field, Cameron Parish, coastal Louisiana, where exploration for new sands around the flanks of the dome has continued active

New Discoveries

Among the domes at which new discoveries recently have been made starting drilling activity are Anse La Butte, St. Martin Parish, and Bayou Blue, Iberville Parish. Anse La Butte, discovered in 1902 as a second field on the Louisiana coast, has produced only small quantities of oil at intervals from shallow sands uncovered in various brief development attempts. The new production, which has given indication of starting an active development play on that dome was opened by Glassell & Glassell in their No. 1 Breaux, located about a half mile west of the dome. The well flowed at the rate of about 350 bbl. of 38-gravity oil daily through a $\frac{1}{4}$-in. choke from a sand in which casing was perforated at 4,630-50 ft. The well previously had been drilled to a total depth of 5,685 ft. in salt topped at 5,390 ft. Pressure recorded was 675 lb. on tubing and 665 lb. on casing.

Following the discovery drilling was started on four additional tests, one of which has been completed in a shallow sand at 2,440-70 ft., establishing another new horizon. Other operations are expected to get under way shortly.

Bayou Blue, although not discovered until 1927, with first production in 1929, is another shallow, piercement-type dome on which, although considerable drilling has been done at various places, no important production has been uncovered until now. The well opening the new production was Superior Oil Co.'s No. 1 Schwing, located on the southwest flank of the dome. It flowed initially 341 bbl. of 31.6-gravity oil through an 11/64-in. choke in 18 hours, gaging 800 lb. pressure on tubing and 650 lb. on casing from a depth of around 5,010 ft. A second well, opening still another new deep sand, since has been drilled by this company, which is undertaking an active development of its properties.

Port Barre, St. Landry Parish, is another coastal Louisiana dome at which important new sands have been discovered at intervals to give incentive for additional drilling. Within the past month the Texas Co. has found a deeper sand at 6,054-96 ft. in its No. 27 Botney Bay, a semiwildcat drilled on the south flank. The dome already is productive from five other horizons, all much shallower than the sand in the Texas Co. well. Five rigs are now running at this dome.

There are 104 known salt domes on the Gulf Coast, of which 57 are in Texas and 47 in Louisiana. Fifteen of the Texas, and 12 of the Louisiana domes, a total of 27, are not producing at this time. Of the nonproducing domes, however, 11 have been productive, although not for long periods nor in large volume. At the same time there are quite a few of the present producing domes that have yielded only limited quantities of oil.

It has been generally believed that all salt domes eventually will be found productive. Support for

this belief has been given in the fact that production on many of the present producing domes was opened only after many years of exploration, and in some instances, after the dome generally had been considered barren. Among such domes is Jefferson Island, one of the old "Five Islands" which, although known since 1895, was not found productive until a couple of years ago. So far this dome is the only one of the group comprising the "Five Islands," all of which are among the oldest known domes on the Gulf Coast, that has been found productive. Until the discovery of oil at Jefferson Island it was generally believed that the "Five Islands" would be forever dry. Now, however, it is considered likely that at some time the remaining domes of the group, including Cote Blanche, Bell Isle, Weeks Island, and Avery Island, will be added to the list of producing fields. In favor of this is the fact that no intensive exploration for oil has been made on any of these domes and what drilling has been done was mostly shallow and undertaken years ago.

West Hackberry, one of the present most active domes, is another instance of a dome which was not proven productive until after many years of drilling. This dome has been known since 1902, but first production was not found until 1928, although intermittent drilling was carried in the intervening years. Even after the discovery of oil in 1928, which then was confined to comparatively shallow sands, important production has been developed only within the last few years with the drilling of deep sands around the flanks of the dome.

On this basis, each of the present nonproducing domes constitutes a definite potential oil reserve, which, with further exploration, may prove to be one of the coast's most prolific producers. At the same time, in view of the diversified opportunities for production on and around domes, there is reason to assume that more important productive areas and sands may be found on many of the present producing domes, including not only those domes which have had only limited production, but also those which already have been highly productive and extensively drilled. Consequently the old salt domes assure an almost unlimited opportunity for continued drilling activity on the Gulf Coast even without that promised in the exploration and development of other types of fields and structures.

It is known that there is hardly a dome on which drilling has been anywhere near complete. While several extensive drilling plays have been carried on, most of this activity has been limited to certain sectors and sands. On most of the older domes that still are unproductive the development took place at a time when methods and equipment were not as efficient and effective as now, and at a time when considerably less was known concerning salt domes and their potentialities. Also, most of the early drilling was centered on shallow sands overlying or immediately adjacent a dome.

The importance attached to salt domes as potential reserves for the future is indicated by the fact that all acreage on and around most of the domes has been tightly held. Although in many instances companies owning acreage may have made little or no attempt to prove up their domal acreage, they have shown little inclination to relinquish any of their leases outright.

On some of the domes, as is the case in many coastal fields, most of the acreage is owned or controlled by single companies, or groups of interests jointly. With such ownership, development usually is retarded, which has been responsible for the slowness with which the resources of many of these domes are revealed. Lately, however, some of the companies controlling unproved acreage around various domes have shown a tendency toward farming out some of their holdings for early development.

Drilling on 57 Domes

Drilling now is going on at 57 of the known 104 salt domes on the coast, with a total of more than 90 rigs in operation. Of the active domes, 36 with 64 rigs running are in coastal Louisiana, and 21 with 27 rigs running on the Texas coast. Seven of these domes, five in Louisiana and two in Texas, are not producing now. The operating rigs listed represented only those at new wells, workovers being excluded.

Among the unproductive domes on which new drilling projects are being undertaken is the Calcasieu Lake dome, southern Cameron Parish. There, Superior Oil Co. has acquired from Louisiana Land & Exploration Co. an 11,400-acre block and has just completed its first test, which was abandoned after encountering salt 2,382-2,580 ft. In the transaction, Louisiana Land & Exploration Co. has the option, if the first well were a producer, to become a joint operator with Superior Oil Co., or, if it did not wish that, it could retain a twentieth overriding royalty. A second test has been started. The dome was discovered in 1928 by Louisiana Land & Exploration Co., which drilled several tests, finding salt but failing to prove production. Acreage then was acquired by the Texas Co., which, over a period of years, drilled a number of deep tests, all dry. No. drilling has been done for the past year. The dome underlies the bed of Calcasieu Lake, necessitating maritime operations.

Section 28 (Hager), in St. Martin Parish, is another old unproductive dome on which exploration has been resumed lately after a long period of inactivity. There, William Helis, of New Orleans, has undertaken the drilling of a series of deep tests around the flanks of the dome. Already five tests have been drilled in this project, the most extensive exploration attempt ever made at that dome, which has been known since 1917 when first salt was drilled. All tests to date have been dry.

At Napoleonville, Assumption Parish, another nonproducing dome, where no drilling dome, where no drilling has been done for several years, Falcon-Seaboard Drilling Co. has started the first of a couple of deep tests planned on acreage taken on a farmout. This dome was discovered in 1926. Except for a couple of deep tests, drilling so far has been confined mainly to the top of the dome in exploration for sulfur.

Humble Oil & Refining Co. is continuing drilling exploration at Bayou Des Glaise, Iberville Parish, another dome on which no production has ever been found. At Fausee Point, Iberia Parish, where so far production has been limited to only a few small wells, and where at present only one well remains, exploration is being carried on by the Texas Co. and Sun Oil Co., each of which has one rig running. Sun Oil Co. only recently entered the picture on this dome. This dome was discovered in 1927 by Gulf Refining Co., which drilled a row of wells straight across the top of the dome, completing one small well that produced less than 2,000 bbl. over a period of several years before being abandoned. The dome then stood idle for a number of years before the Texas Co. became interested in it, and which company since has kept up fairly steady exploration.

(Continued on Page 102)

***Above:** New drilling activity around the southeast side of the East Hackberry dome, Cameron Parish, coastal Louisiana*

***Right:** Deep sand tests on northwest flank of the old Jennings salt dome, Acadia Parish, coastal Louisiana, showing portion of old shallow field in background*

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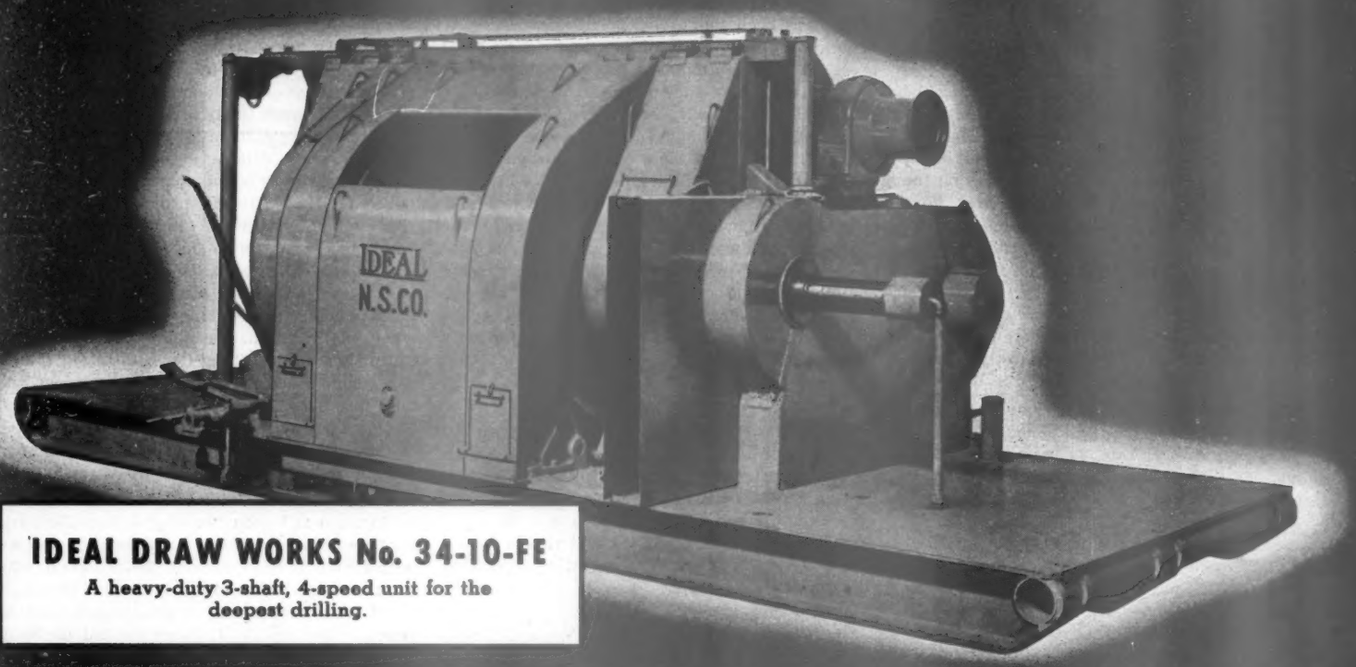

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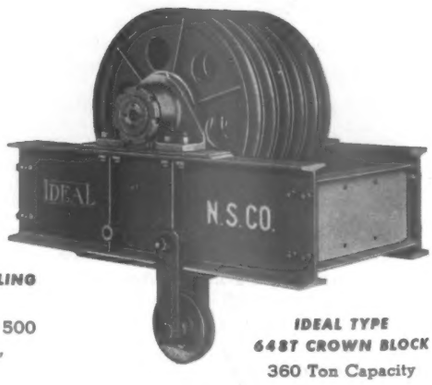

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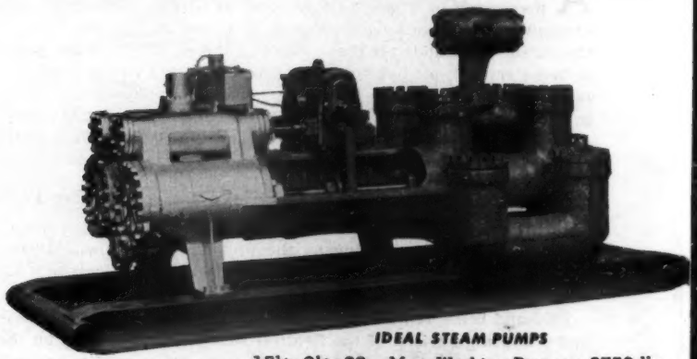

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Formation Pressure Increased By Gas Injection

Left: Water heater for heating water circulated through jacketed gas-return line to well in repressuring installation in La Blanca field, Hidalgo County. Below: Repressuring operation in La Blanca field. Well in background had been recompleted and was being tested while picture was taken. In foreground is improvised high-pressure separator. Vent line at top connects with return line to well

A CONSERVATION project involving the repressuring of a gas-distillate sand in which excessive withdrawals have reduced pressures to the extent that fluids are precipitated in the sand is being carried out by Pantana Petroleum Corp. in La Blanca field, Hidalgo County, Texas. By injection of gas from higher pressure producing sands it is hoped that pressures in this sand will be built up to a point that precipitation will be prevented and recovery of all the fluid eventually will be made possible. Experimental production tests from this sand reveal that the gasoline content of the gas is increasing as the pressure in the sand rises, indicating that the objective will be realized.

The sand being repressured is the 7,900-ft. original producing horizon of the field. It will be recalled that during the 14-month period from January 1938 to March 1939, while one of the wells in this sand was blowing wild after blowing out and cratering, the Railroad Commission ordered all other wells in the sand opened as an emergency measure to relieve pressure on the sand that the hazard of charging of sands and spread of blowouts and craters might be minimized. It is estimated that during this period of wide open production from 70 to 80 billion feet of gas was taken from the sand.

Prior to the blowout and opening of the wells bottom-hole pressure was approximately 3,400 lb. At that time the gas-oil ratio was 90,000 to 100,000 ft. of gas per bbl. During the period of open production pressure dropped to from 1,400 to 1,600 lb., and with this drop the gas-oil ratio increased to about 350,000 ft. per bbl., indicating that most of the fluid content was being precipitated in the sand as the result of retrograde condensation.

Five Producing Wells Recompleted

With other high-pressure gas-distillate sands known to be present in the field, Dr. Burton McCollum of McCollum Exploration Co., and principal owner of Pantana Petroleum Corp., conceived the idea of utilizing the gas from those sands in building up the pressure and reclaiming the fluid content in the 7,900-ft. sand. Taking over the wells of each of the other operators in the field, his company, Pantana Petroleum Corp., since then has engaged in working over these wells in turn, recompleting them in one of the other sands, and producing them to return the stripped gas to the 7,900-ft. sand.

This company has five producing wells in the field all of which now have been recompleted either in the 7,400-ft., 7,500-ft., or 8,000-ft. sand. A sixth well has been left in the 7,900-ft. sand for experimental production tests to determine the benefits being derived from the repressuring operations. Surface working pressure of wells in the 7,400-ft. sand runs about 2,500 lb.; wells in the 7,500-ft. sand have a pressure of about 2,650 lb., and in the 8,000-ft. pressure is about 3,450 lb.

Each well constitutes a separate recycling unit. In this, the gas stripped of its fluid content is returned to the formation directly through the same well from which produced. In the 7,400-ft. and 7,500-ft. sand wells the gas is produced through the casing and returned through the tubing while in the 8,000-ft. wells the flow is reversed. The wells for this purpose are recompleted with the tubing sealed at a point between the producing sand and the 7,900-ft. sand. In completing the wells, the casing is perforated with 80 holes in the 7,900-ft. input sand, and with 40 holes in the producing sand.

Although not located and drilled with a view toward repressuring of the field the wells scattered over the reservoir happened to be located that they can serve this purpose fairly effectively. No entirely new wells have been drilled but if developments warrant this will be done.

Extraction of Fluid Content

Extraction of the fluid content from the gas produced is being accomplished by the differential in pressures between the producing sands and the input sand, aided by a slight reduction of temperature of the gas between the well and the separator. Temperature reduction is a more important factor in the production of the 7,400 and 7,500-ft. sands, from which the fluid content carries a high percentage of gasoline ends, than in the production of the 8,000-ft. sand, fluid content of which carries mostly heavier distillates.

Separation of fluids takes place with a drop of pressure to 2,000 lb. and below, and as the gas is returned to the well at a pressure of only 1,750 lb., highly efficient recovery of fluid is effected, particularly of the gasoline ends. In the production of present sands it is calculated that any precipitation of the heavier ends in these sands will be more than compensated for by eventual reclamation and conservation of fluids in the 7,900-ft. sand. Production from the latter sand will not be attempted, however, until such time as the reservoir pressure has been built up sufficiently to permit the effective recovery of the fluid with adequate recycling practices.

Essentially, the operation of fluid separation and return of the gas to the well comprises three steps. These are: First, cooling of the gas; second, extraction of the fluid by reduction of pressure in a high-pressure separator, and third, reheating the gas for injection into the well. Necessary equipment and facilities are comparatively simple, involving a minimum investment for installation and low operating costs.

Gas produced in the field is exceptionally warm, the temperature being about 120° F. For efficient separation of fluid content it is desirable to lower this temperature to about 78° F., which is accomplished by circulating cool water through jackets which enclose sections of the high-pressure flow line from the well to the separator. The jackets

(Continued on Page 102)

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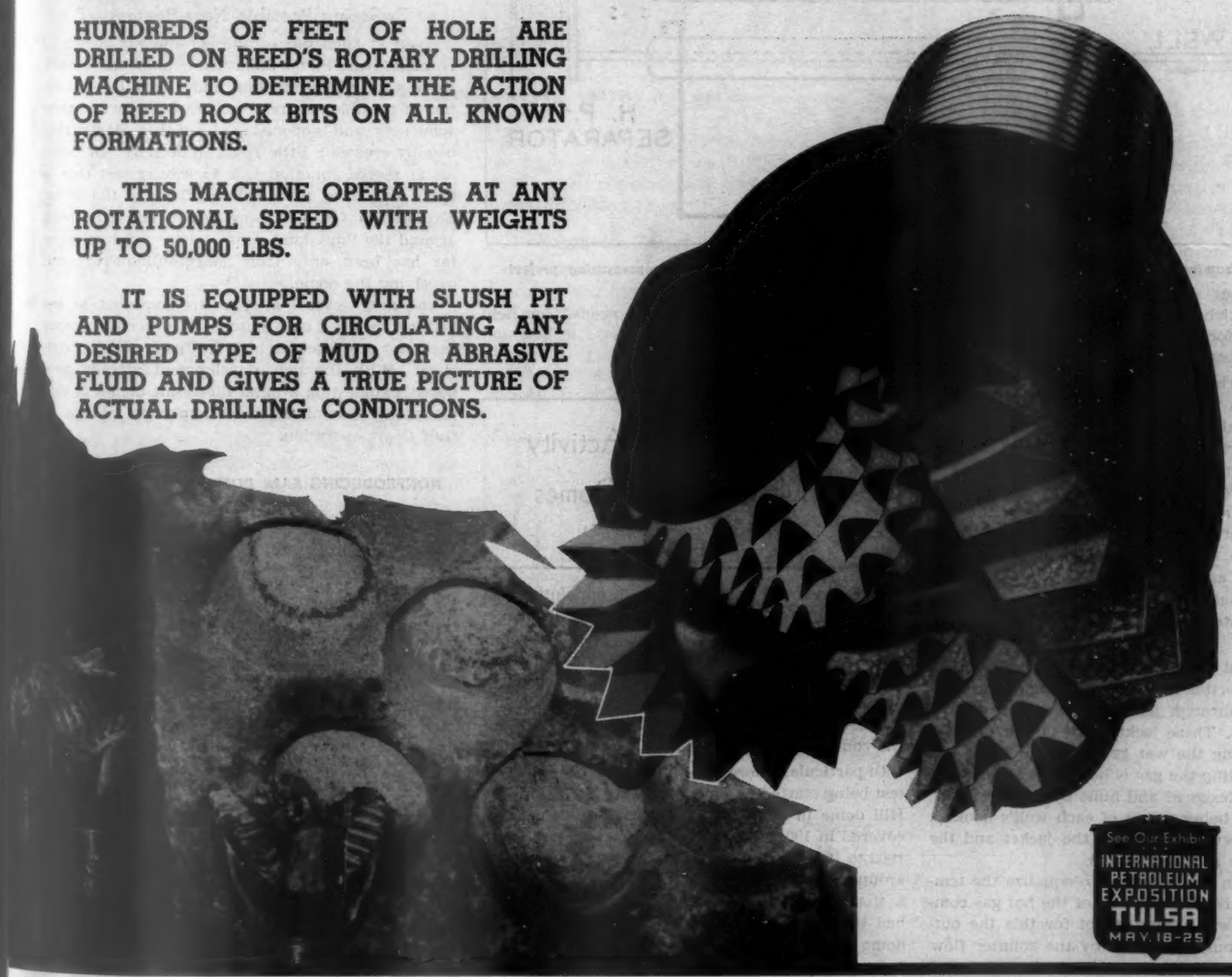

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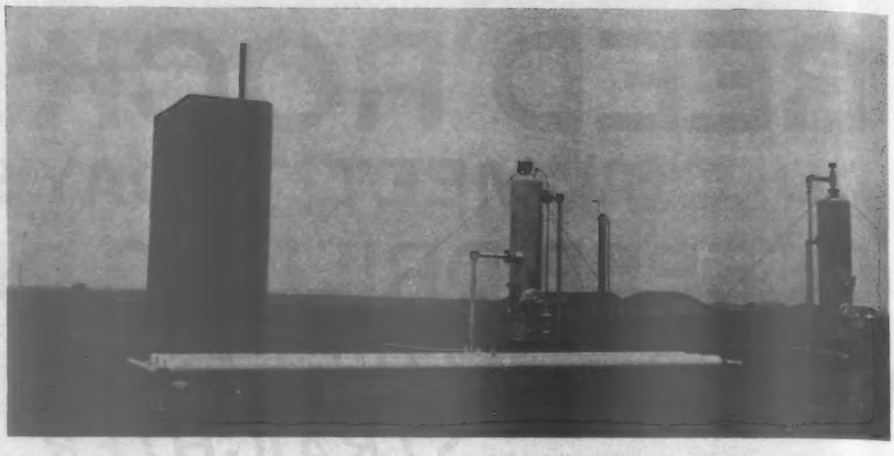
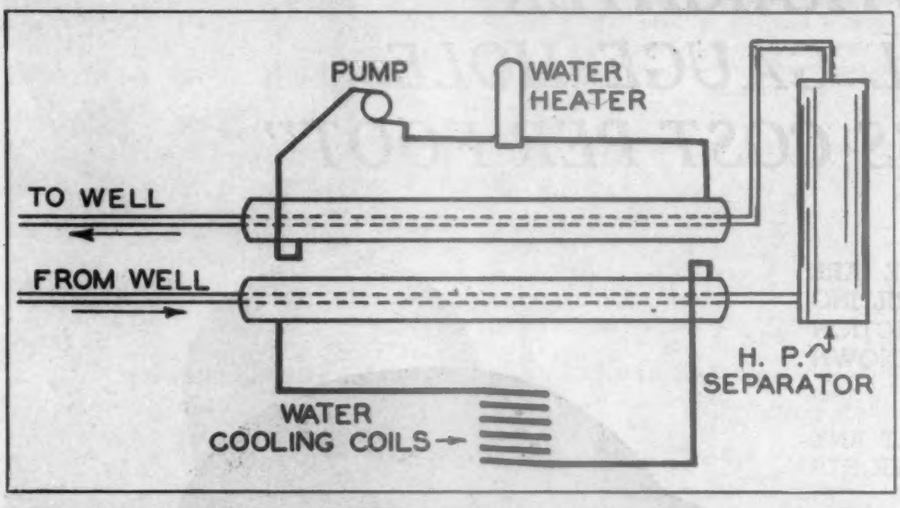
have been made from sections of old 6-in. casing welded together and sealed around the flow line.

While no uniform design or layout of lines has been followed on all wells the length of the jacketed section of the flow line has been calculated to provide sufficient cooling surface contact to effect the desired temperature reduction. Approximately 300 ft. of jacketing is provided on one well.

Cooling water is circulated in a closed system through cooling coils in a small atmospheric cooling tower which is a part of each well hookup. Fresh water for cooling-tower operation is available from irrigation canals that traverse the field.



Right: One type of gas coolers in repressuring installation in La Blanca field. Instead of long, single-jacketed line as in some installations, this hookup consists of three sections of jacketed line in series. At left rear is small water-cooling tower. Small tower in background, between separators, is water heater for heating gas returned to well. Return line is not shown



Schematic drawing of equipment for handling high-pressure production at La Blanca repressuring project

A single high-pressure separator is provided for each well. On this a back pressure of about 1,750 lb. is held. This is sufficiently low to permit separation of most of the fluid content, and yet high enough to permit injection of the gas directly into the well. Later, with increased pressure in the 7,900-ft. sand and decline of pressure of the producing sand it may be necessary to install compressors. The separator used in one installation was designed and built by the operators. It was made from a half joint of 9⅝-in. high-pressure pipe which was fitted with the necessary baffles and vent line.

The stripped cool gas from the separator is reheated for injection into the well by circulation of warm water through jackets that enclose the return flow line. These jackets are similar to those used for cooling the wet gas from the well. The water for heating the gas is heated in a small gas-fired heater, designed and built by the operators, such a heater being a part of each well's hookup. The water circulates through the jacket and the heater coils in a closed system.

The injection gas is heated to equalize the temperature of this gas with that of the hot gas coming from the well. Were it not for this the outcoming gas would be cooled by the counter flow of injection gas within the well which might tend to cause freezing and possible precipitation of fluid within the well. Heating the gas is a comparatively small item as very little temperature increase is necessary.

All gas produced, except some taken by gas lines serving the area and that needed for field use, is returned to the formation.

●

Drilling Play Reflects Activity Near Gulf Coast Salt Domes

(Continued from Page 95)

After years of more or less disappointing development on and around the White Castle dome, Iberville Parish, Shell Oil., Inc., has uncovered what so far has turned out an important producing area on the north flank, and is carrying out a systematic drilling program in proving this up. Previous development has been mainly around the south side of the dome.

Of particular interest on the Texas coast is a deep test being started by Marrs McLean on the old Big Hill dome in Matagorda County. This dome, discovered in 1901, was productive in the years from 1902 to 1906, during which period recovery totaled around 300,000 bbl. The field was abandoned after a storm leveled all the windmill derricks which had been used in pumping the wells. While the dome has since been developed for sulfur, and numerous shallow sulfur wells have been drilled over the cap rock area, there has been no important drilling for oil. The McLean test is scheduled to go to 8,000 ft.

Discovery of a new deep sand on the northwest flank of the Fannett dome, Jefferson County, has rewarded continued drilling by Gulf Oil Corp., around that dome. Gulf has completed its second well in that sand encountered around 8,200 ft. Gulf has been keeping one rig running at this dome most of the time.

New drilling also is under way at Danbury and Allen, Brazoria County domes, both of which have had rather spotted careers. Present exploration at the former is by Humble Oil & Refining Co., while Titanic Oil Co. has taken over at Allen.

Exploring Possible New Reserves

Even at such old prolific producing domes as Humble, Hull, Pierce Junction, Orange and others, there still is some drilling under way in exploration of possible new reserves. Every now and then some new sand is opened at one of these domes that usually creates a little spurt in activity. Of interest at Pierce Junction is a Vicksburg test that is being started on the northeast flank of the dome. Exploration for Vicksburg production continues around the Sugarland dome, where production so far has been only from Marginulina-Frio sand overlying the dome.

The next several months are expected to see drilling resumed on a number of other old domes that now are inactive, both in Texas and in Louisiana. With the new development already proposed, exploration around these salt domes is due to become one of the most important phases of Gulf Coast operation.

NONPRODUCING SALT DOMES ON GULF COAST

TEXAS

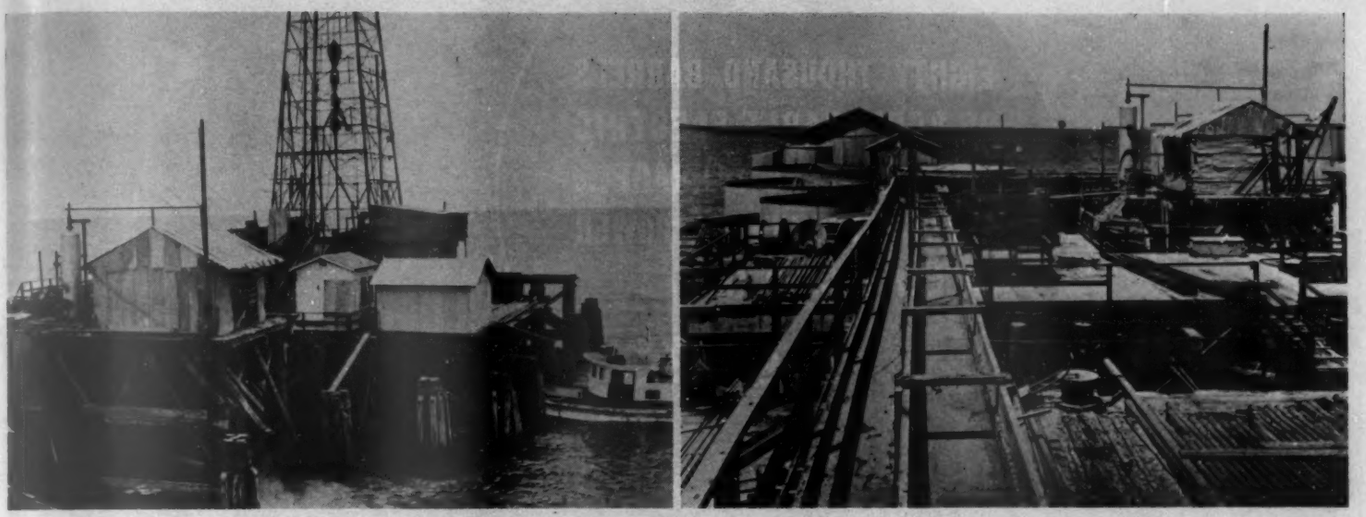
Dome and county—	Year salt proved	Years productive	Total prod. (bbl.)
Big Hill, Jefferson	1901	1923-24 1937	 17,450
Big Hill, Matagorda	1901	1904-07	203,590
Bryan Mound, Brazoria	1901	.....	.....
Clemons, Brazoria	1926	.....	.....
Davis Hill, Liberty	1905	.....	.....
Gyp Hill, Brooks	(*)	.....	.....
Hawkinsville, Matagorda	1926	1936	Small
Hockley, Harris	1906	1920-24 1932-33	16,930 .....
Hoskins, Brazoria	1904	1904-07	31,750
Long Point, Fort Bend	1924	.....	.....
McFaddin Beach, Jefferson	1938	.....	.....
Moss Bluff, Liberty	1930	1930-35	205,825
Nash, Ft. Bend-Brazoria	1924	1926-36	1,707,385
Palangana, Duval	1901	1928	Small
Stratton Ridge, Brazoria	1913	1922-23 1933	31,890 .....

*Definite date unknown but existence of dome recognized since earliest records.

LOUISIANA

Dome and parish—	Year salt proved	Years productive	Total prod. (bbl.)
Avery Island, Iberia	1862	.....	.....
Bay Junop, Terrebonne	1930	.....	.....
Bayou Des Glaise, Iberville	1929	.....	.....
Belle Isle, St. Mary	1896	.....	.....
Calcasieu Lake, Cameron	1928	.....	.....
Cote Blanche, St. Mary	1921	.....	.....
Marchland, La Fourche	1936	.....	.....
Napoleonville, Assumption	1926	.....	.....
Pine Prairie, Evangeline	1909	1912	20,000
Section 28 (Hagar) St. Martin	1918	.....	.....
Weeks Island, Iberia	1897	.....	.....
Caillou Island, Terrebonne	1939	.....	.....

Ten Holes Drilled From One Marine Location



General view of drilling dock (left), and mud ditch and tanks on marine directional-drilling job (right)

BY the aid of directional drilling, Superior Oil Co. and Pure Oil Co., joint operators in the Creole field, located in the Gulf of Mexico, off the coast of Cameron Parish, Louisiana, have been successful in exploring and proving up an area nearly a mile square from a single, centrally located drilling pier. In this project, the largest of its kind ever undertaken, 10 wells have been completed so far. In addition, drilling has been carried to nine other entirely separate and exploratory subsurface locations, representing the equivalent of a total of 19 tests that have been drilled from the single pier.

The nine uncompleted tests were original holes of some of the 10 completed wells that failed to get production at their respective subsurface locations and then were sidetracked at some point up the hole, generally at the point of first deflection just below the surface casing around 1,200 ft., and new hole drilled to other entirely separate locations or different sands. In three instances not only the original hole but the sidetracked hole proved dry, occasioning the drilling of a third hole from one surface location. By sidetracking of unproductive holes and redrilling in the same well to other subsurface locations and sands where other production could be found, there have been no actual failures in the field.

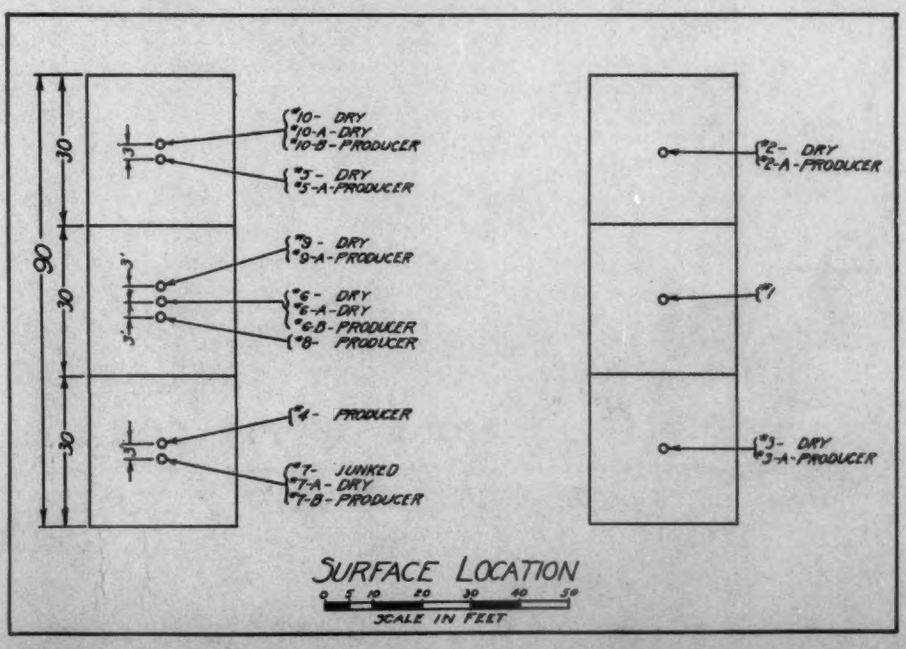
Drilled total depths of the wells range up to 9,394 ft., to which depth the discovery well was carried. This well, the first test, was drilled vertically, being carried to that depth for exploratory purposes. It was completed in a sand in which casing was perforated at 5,110-30 ft. Other wells have been drilled out in various directions from this location to subsurface locations ranging in horizontal displacement up to 2,417 ft.

To attain the unusually great horizontal displacement effected in some of the outlying tests, exceptionally high angles of deflection were required in many instances, particularly in the shallower wells. One well, No. 6, drilled to a depth of 7,200 ft. with a horizontal displacement of 2,417 ft. southeast from the discovery well, deviated as much as 44° from vertical. Its average angle of deviation was 31°. Angles of 20° to 28° were common, and were drilled without undue difficulty.

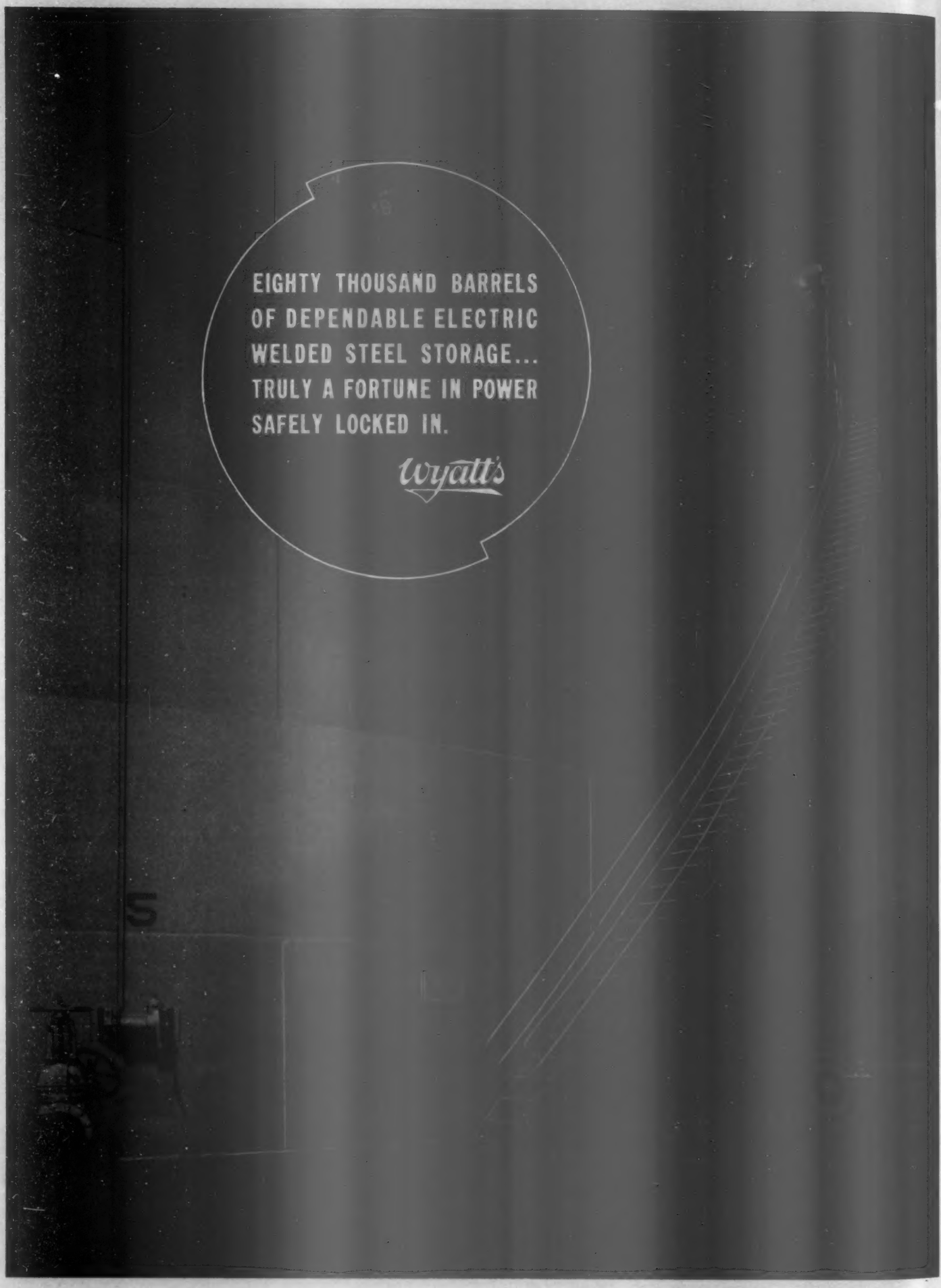
Engineers Direct Deflection Work

Hole deflection in this project has been directed by engineers of Fullgage Deflecting Tool Co., of Houston, who have remained on the job, working in conjunction with engineers of Superior Oil Co. For the most part, however, courses of the holes were governed by controlled drilling. Deflecting tools were run only for sharp changes in course. Usual practice has been to drill the holes vertical to between 1,200 and 1,400 ft., where 9⅝-in. surface casing is run. The deflecting tool is run to make the first deflection and start the hole in the right direction and establish a uniform, sweeping drift that will end the hole at the desired horizontal displacement at the desired depth. Single-shot surveys are run regularly to check the course of the drift.

Originally, it was planned to drill a total of nine wells from the central location, one well to each of the 20-acre units making up the square 180-acre block expected to be covered in the



Plan of drilling docks, showing three holes drilled by moving only 6 ft.

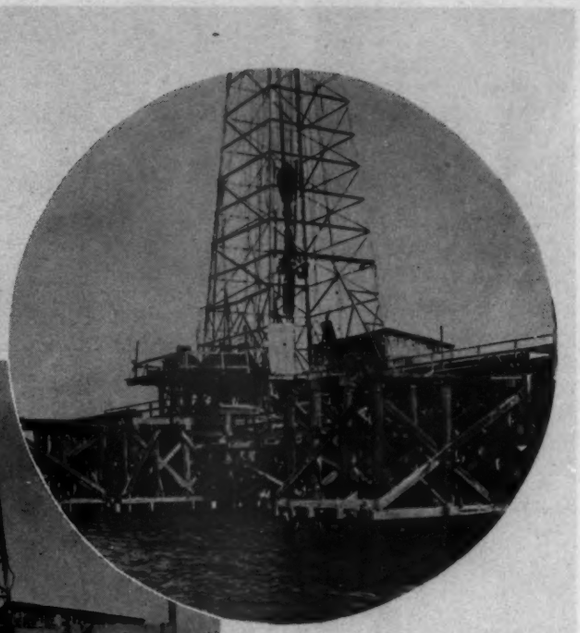

EIGHTY THOUSAND BARRELS
OF DEPENDABLE ELECTRIC
WELDED STEEL STORAGE...
TRULY A FORTUNE IN POWER
SAFELY LOCKED IN.
Wyatt's

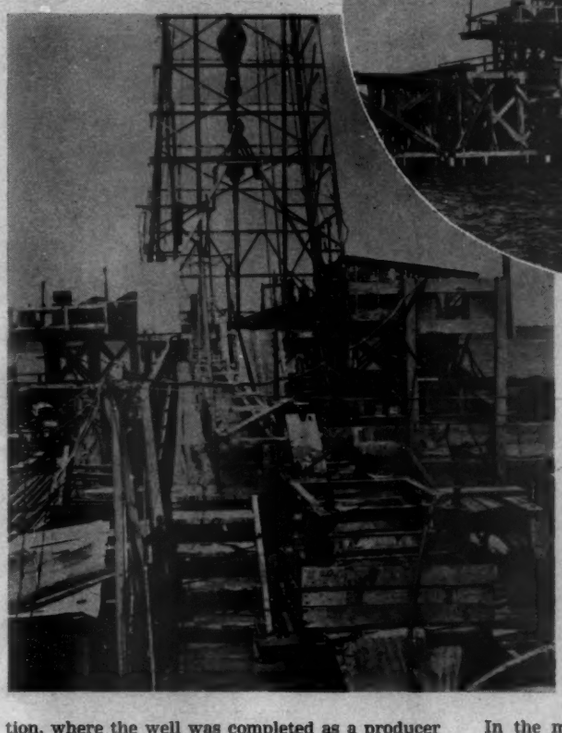
project. Located in the center of the block, the first well was drilled vertically to the middle 20-acre unit. The other eight wells were to have been drilled directionally in a square around the first well to their corresponding 20-acre unit. For each well, the derrick and rig were to be skidded 30 ft., the width of the derrick floor. If this project had been carried out, the drilling pier would have ended up approximately 90 ft. square, containing three rows of wells each way, spaced 30 ft. apart.

At that time it was assumed, on the basis of geophysical information available, that the location of the first test was well up on structure and that any production found would extend over the area coming within the scope of the project. Subsequent drilling revealed that, due to faulting, much of the area to the north of the first location is cut off from production. Consequently, it was necessary to abandon the original spacing pattern and alter the drilling program to provide a pier design and well arrangement to permit deviation of more wells to the south, southeast and southwest. The fact that several different sands have been found complicated the development and added to the number of wells to be drilled.

The present drilling structure, floor plan of which is shown in an accompanying drawing, includes two parallel piers, each of three well units long, north and south, totaling approximately 90 ft. By skidding the rotary about 3 ft. either way from the center location it has been possible to drill as many as three entirely separate wells from each well unit, which would make a total of 18 wells, exclusive of sidetracked holes, for the six well units comprising the two piers, if all were drilled.

The piers have been built in units as additional wells have made necessary. Location of the discovery well, the first test drilled, which was to have occupied the center location of the square-pier arrangement originally planned, is the middle unit of the east or inside pier. For the second test a unit was built north of the original unit, the two north leg foundations for the latter serving as the inside legs of the extension unit. This second test, 30 ft. north of the discovery well on the surface, was drilled to a subsurface location approximately 1,600 ft. northwesterly to prove the northwest 20-acre unit of the original project. It failed to find production and after being drilled to a total depth of 6,813 ft. the hole was abandoned. However, before moving to another location, operators plugged back to about 1,200 ft. just below the surface casing at a point where the hole has been deflected from vertical and sidetracked drilling to a location approximately 400 ft. east of the discovery well. The discovery sand was found at this location, where the well was completed as a producer at 5,137-39 ft.





Above: Details of piling on drilling docks. Left: Shale shaker and ditch on marine directional-drilling job

For the next hole (No. 3), location was made 30 ft. south of the discovery well, for a which a unit was added on the south end of the pier. This hole was drilled to a location about 490 ft. southeast of the discovery well, where it ran low, finding a faulted condition. Plugged back to the original deflection below the surface casing around 1,300 ft., a second hole, No. 3-A, was sidetracked. It was drilled to a location approximately 1,000 ft. east and slightly north of the discovery well, where at a depth of 5,247-67 ft., in the discovery sand, it was completed as a producer.

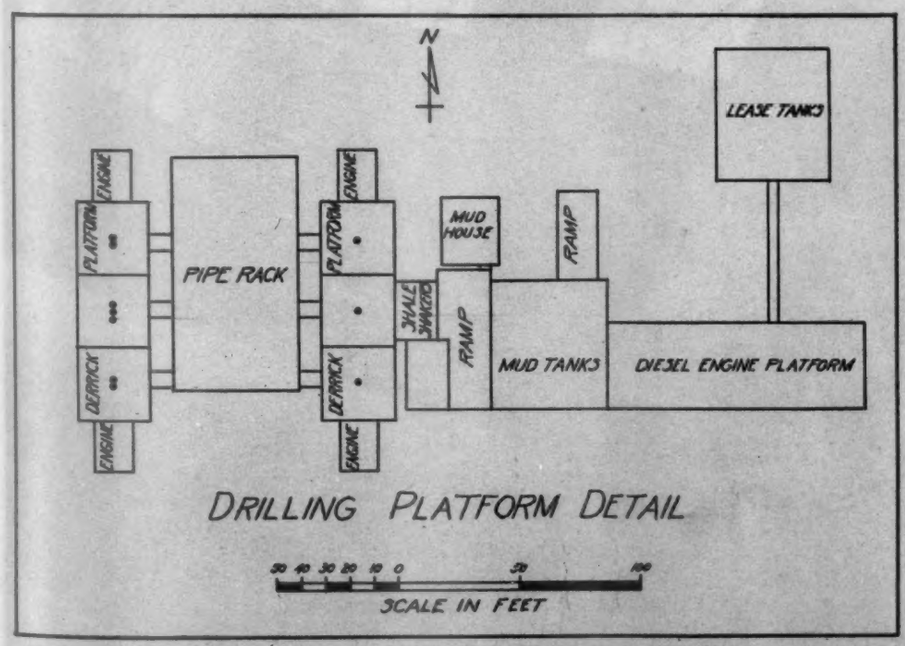
In the meantime it was decided to build the second pier, which was done while the above wells were drilling. It was located on the opposite side of the pipe rack, which had been built on the west side of the first pier. This has placed the pipe rack between the two piers, where the pipe is equally accessible to either row of wells. The pipe rack is 72½ ft. wide, with the two piers being spaced 102 ft. apart, center to center.

Location for the fourth test was made at the south end of the second pier, opposite Nos. 3 and 3-A. This move necessitated tearing down and rebuilding the derrick as it could not be skidded as a unit across the pipe rack. A well was completed in the first hole from that location, production being found in the discovery sand at 5,140-53 ft. at a location approximately 470 ft. southwest.

The derrick, rotary and draw works then were skidded to the north end of the pier for No. 5. This well was drilled to a location 1,267 ft. northwest to test a 3,900-ft. sand passed up in No. 4, and was one of the higher-angle holes drilled, having an average angle of deflection of 25°. A dry hole, it was plugged back and sidetracked for No. 5-A. As No. 5 was a high-angle hole, the new hole was sidetracked from the low side of the first hole without the aid of deflecting tools. No. 5-A was drilled to a location 1,070 ft. northwest but in a more northerly direction than No. 5. It was completed as a gas well at 6,847-54 ft., where casing was perforated, after the hole had been drilled to a total depth of 7,197 ft.

Location for No. 6 was made 30 ft. north of

(Continued on Page 111)



Detail plan of the drilling docks, showing location of equipment

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No. 5 in the middle unit of the west pier. It was drilled to a location 2,417 ft. southeast, where it was dry. It was plugged back to the original point of deflection, and from its low side, it was sidetracked for No. 6-A, which was drilled to a location 2,412 ft. northeast. This location also was dry, occasioning the drilling of still another hole. No. 6-B, from the original No. 6 location. No. 6-B, which was sidetracked from the low side No. 6-A, was drilled to a location 1,330 ft. southwest of the discovery. It passed up the 5,100-ft. sand and went to a total depth of 6,832 ft., where it found another oil sand, in which it was completed through casing perforations at 6,765-75 ft. as the discovery well of that sand.

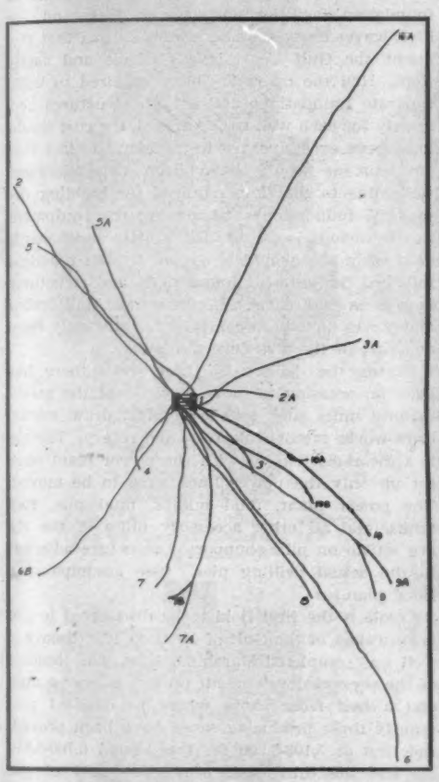
In view of this discovery it was decided to drill the next well in the same general direction, so derrick was skidded back to the south end of the pier, where No. 4 had been drilled. For this well the rotary was set 3 ft. south of No. 4's location. This well was drilled to a point 1,117 ft. south and slightly west, where it was abandoned as a junked hole with drill pipe stuck. This hole then was sidetracked for No. 7-A, which was drilled to a location 1,340 ft. south. This hole missed and was sidetracked for No. 7-B. In this case the hole was sidetracked at a point less than 1,000 ft. off bottom. Bottom of No. 7-B drilled to a location 1,067 ft. south of the discovery well and closer in from No. 7-A, was completed as a well at 6,735-48 ft., the new sand opened by No. 6-B.

Location for No. 8 then was made 3 ft. south of the location for Nos. 6, 6-A and 6-B, in the middle unit of the west pier. It was drilled 1,273 ft. southeast and completed in the 6,700-6,800-ft. sand, perforating casing at 6,750-52 ft. after plugging back from a total depth of 7,051 ft. to which it had been drilled for exploratory purposes. For No. 9, the rotary was skidded 6 ft. north to a location 3 ft. north of No. 6-6-B. It drilled to 1,550 ft. southeast. From this hole, No. 9-A, sidetracked from the low side of No. 9 at a point within 1,000 ft. off bottom, was drilled to a location 1,607 ft. south of the discovery well at a point slightly west of the bottom of No. 9, and was completed as a producer in the 6,800-ft. sand, in which casing was perforated at 6,901-03 ft.

No. 10 was located 3 ft. north of No. 5-5-A, north end of the pier, and was another three-hole well. The first hole was drilled 1,160 ft. southeast. The second hole, No. 10-A, sidetracked from the low side about midway up the hole and was drilled back to a location about 26 ft. southeast. Dry, No. 10 was sidetracked again higher up for No. 10-B, which at a location 809 ft. southeast, was completed as another well in the 6,700-6,800-ft. sand, which it found high, completed depth being 6,690-95 ft.

The next location is expected to back on the east pier, where present wells may be twin-drilled. For this move the derrick will have to be torn down and again rebuilt. Plans call for the drilling of two or three additional wells to complete this first directional-drilling project.

Operators already are considering the procedure to be followed in continuing development of the field. In view of the fact that production



Fifteen wells from one location. Plat of directional-drilling project off Louisiana coast

LEGEND

Well No.	Horizontal displacement vertical	Max. angle	Any angle
1			
2	1,600	23° 00′	16° 30′
2A	400	9° 00′	6° 30′
3	490	8° 30′	7° 00′
3A	1,000	17° 30′	14° 00′
4	470	10° 00′	6° 45′
5	1,267	31° 45′	25° 00′
5A	1,070	16° 00′	10° 15′
6	2,417	44° 00′	31° 00′
6A	2,412	30° 60′	23° 45′
6B	1,330	19° 00′	13° 45′
7	1,115	12° 30′	11° 45′
7A	1,340	17° 30′	13° 45′
7B	1,067	12° 00′	7° 30′
8	1,273	14° 30′	10° 30′
9	1,550	31° 00′	20° 45′
9A	1,607	23° 00′	10° 45′
10	1,160	17° 00′	12° 00′
10A	26	10° 00′	8° 00′
10B	809	11° 00′	8° 15′

A Perfect Seal At Any Pressure

Grizzly Powerflex — the strongest, most flexible rotary hose we ever built — *built integral* with our new pressure seal coupling in such a manner that it positively cannot leak, pull out or blow out. Steel armored full length and circumference of hose, yet sufficiently flexible to coil. Specify Grizzly Pressure Seal and eliminate *all* hose troubles. Ask your supply dealer or write for Bulletin No. 20-OF.

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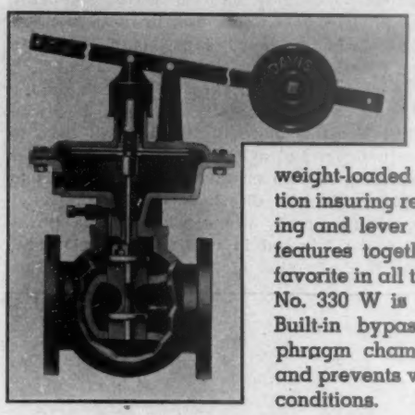
FIELD REGULATORS FOR GAS GATHERING SYSTEMS



THE Davis line of field regulators includes both spring-loaded and weight-load designs for back pressure or vacuum service. The unit illustrated here is the popular No. 330 W.

This valve combines the sensitivity of a weight-loaded regulator with the patented weatherproof construction insuring reliable trouble-free service. Valve stem, stem bushing and lever pins are stainless steel to resist corrosion. These features together with its rugged construction have made it a favorite in all the fields. Merely by reversing the counter-weight, No. 330 W is convertible for either vacuum or back pressure. Built-in bypass (for throttling flow to diaphragm chamber) steadies the valve action and prevents vibration under severe operating conditions.

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No. 330 W

For complete information about the Davis line of gas regulating valves get our Bulletin G 1.

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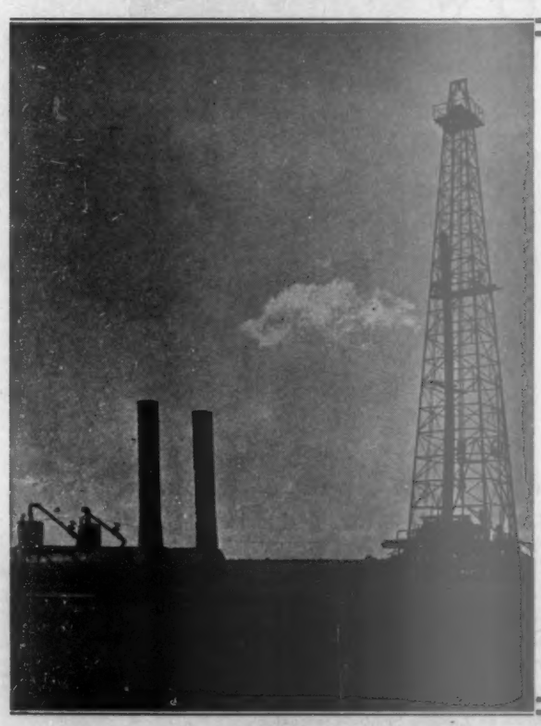
MID-CONTINENT AND GULF COAST REPRESENTATIVE: Westcott & Greis, Inc., Tulsa, Dallas and Houston. WEST COAST REPRESENTATIVE: Bert W. Paul, Los Angeles.



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has been cut off to the north or landward side by faulting, the next move necessarily will have to be seaward where, in deeper waters much farther from shore, the problem of providing adequate foundation and structural facilities will be much greater than at the present location. Some consideration has been given to the possibility of designing and building a gigantic, seagoing drilling barge, capable of operating in deeper water than any of the present barges, but the costs of such a barge and the hazards of operating in the Gulf may be prohibitive, leaving as the only alternative the setting up of wells on piling foundations.

Directional drilling has been an important factor in making possible the development of the field to date. Located as the field is from ¼ to 2 miles out in the Gulf of Mexico, provision of foundation facilities adequate to withstand the high waves and tides and severe storms that frequent the Gulf Coast is a difficult and costly item. Had the operators been required to build separate foundations and set up structures separately for each well so far drilled, the cost would have been excessive, not to mention the fact that development would have been delayed materially due to the time required for building the separate foundations and moving the equipment to the various locations. Difficulties and hazards of moving also would be great. By the practices followed the costs of foundations and structures have been reduced to a minimum per well drilled and moves have been confined to shifts only from one part of the structure to another.

During the drilling of these wells there has been no occasion to move any except the actual drilling units such as the derrick, draw works, draw-works motors (electric) and rotary. The rig is a diesel-electric, so with the power plant once set up only the power lines have to be moved. The power plant, mud pumps, mud pits, fuel tanks, and all other accessory units of the rig are set up on piling-supported structure adjacent to the actual drilling pier. (See accompanying floor plan.)

Creole is the first field to be discovered in the open waters of the Gulf of Mexico. The discovery well was completed March 11, 1938. The location of the present development project is over a mile and a half from shore where as detailed previously three producing sands have been proved, the first at 5,100-5,200 ft., the second 6,700-6,850 ft., and the third now productive only of gas from 6,900 to 7,000 ft. Production is moved by means of a 3-in. pipe line which extends from the pier to storage tanks on the shore.

PRODUCING WELLS IN THE CREOLE FIELD

Well—		Comp.	T.D. (ft.)	Prod. sand (ft.)
1	State	3-11-38	9,394	5,110-30
2-A	State	7-25-38	5,159	5,137-59
3-A	State	12- 1-38	5,267	5,247-67
4	State	1-19-39	5,153	5,140-53
5-A	State	.....	7,197	6,847-54
6-B	State	6- 4-39	6,832	6,765-75
7-B	State	8- 2-39	6,748	6,735-48
8	State	10- 3-39	7,051	6,750-52
9-A	State	12-10-39	6,950	6,901-03
10-B	State	2-20-40	6,725	6,690-95

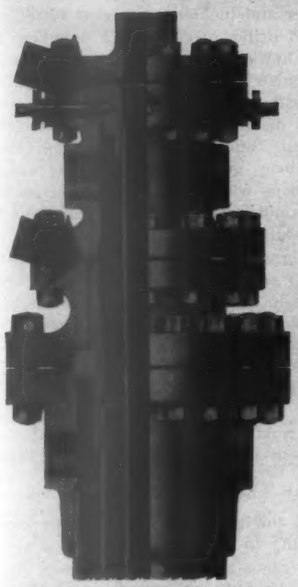
Booklet Tells of Possibilities Of Texas Oil Shale

An oil shale in the Llano mineral region northwest of Austin, Tex., that may solve the petroleum problem when Texas' vast crude-oil wells run dry is described in a University of Texas geology circular issued recently.

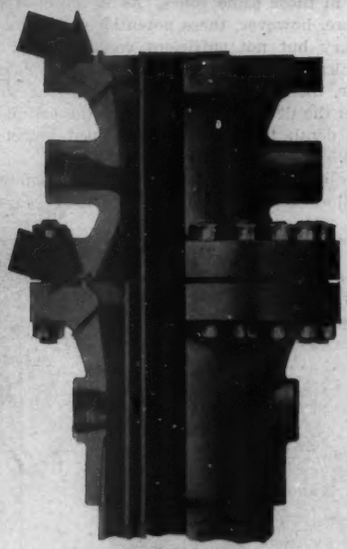
Prepared by Frederick B. Plummer, geologist for the university Bureau of Economic Geology, the circular with large maps was prepared in answer to numerous requests received by the university on the status of its investigation.

Laboratory tests yields for 63 samples of the petroliferous shales have averaged 13.4 gal. per ton, Mr. Plummer reported.

RECTORHEAD



Type FAS RECTORHEAD, with Type 6M Mandrel Suspension Tubing Head



Type RH RECTORHEAD Slip Type Casing Head. (Hydraulic packing for emergency only.)

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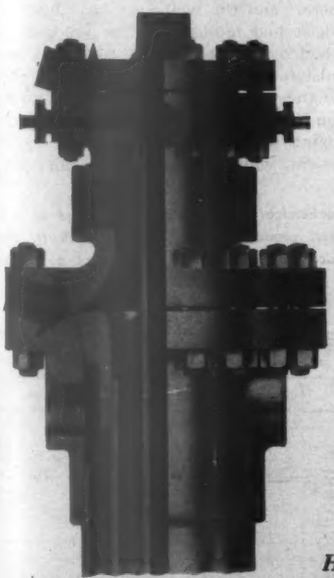
Rector introduced to the field this patented combination sealing and hold-down arrangement in casing and tubing heads . . . designed it, perfected it, proved its unquestionable advantage over any other means in general use for sealing of pressures, and preventing upward thrust of casing resulting from excessive pressures or expansion of casing due to high temperatures.

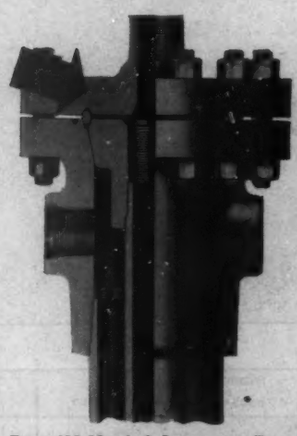
This safe, dependable feature makes possible in RECTORHEADS a two flange connection . . . conforming to API specifications . . . with one seal ring packing medium between flanges, in contrast with some designs using a three flange arrangement, with separate seal rings between flanges. It therefore, accomplishes the necessary seal with one, *not two* separate seal rings, and with two flanges instead of three, and enables Rector Well Equipment Company to manufacture for the operator the safest, simplest, and most compact casing head on the market.

Hundreds of these installations on high pressure wells without a failure proves the efficiency and dependability of this design.

Your copy of the 1940 RECTOR CATALOG sent upon request.



Type 6M Mandrel Suspension RECTORHEAD Casing Head and Tubing Head Combination.



Type 6M Mandrel Suspension Type RECTORHEAD Tubing Head with threaded bottom connection.

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RECTOR WELL EQUIPMENT CO. INC.
"MAKING THE OIL INDUSTRY SAFER"

Geochemical Well Logging

By E. E. ROSAIRE
Subterrex, Houston, Tex.

SUBSURFACE geological methods permit reasonably satisfactory depth predictions to certain sedimentary horizons which are important objectives because of production established elsewhere in those same zones. As is the case with structure, however, these potential reservoirs are necessary but not sufficient conditions for the economically utilizable accumulation of petroleum. To date, there is no prospecting technique which permits the determination or even the estimation of the depth to an as yet untapped petroleum deposit.

Many oil fields encircle dry holes, abandoned at shallow depths, which were drilled years in advance of the discovery test. Such dry holes can be found at Sugarland, Lovell's Lake, Oklahoma City, and elsewhere, prospect holes in which the "suitcase sand"* was encountered above the "farmer's sand."†

As long as we thought that "oil was where we found it," and looked for a geometry which might or might not be a reservoir of petroleum, that prospecting deficiency was a serious but not a fatal handicap. If brought home to us at all, it was in the form of a delayed-action disappointment which we could only grin and bear, after some later and luckier prospector offset our dry holes, and drilled deeper for a discovery well.

Today, however, we recognize the existence of a geochemistry of a petroleum deposit, and, in geochemical prospecting, seek for and recognize evidences of the existence of the petroleum deposit itself. Such clues result from the slow effusion over geologic time of the component hydrocarbons which are driven into and through the surrounding and overlying sediments by the rock pressures existing in the petroleum deposit itself. Significant geochemical anomalies are formed to the same order of magnitudes over deep deposits (such as the pay which is 13,000 ft. deep at the Wasco oil field in California) as they are over the shallow deposits (such as the pay only 1,500 ft. deep at the Ezzell oil field in South Texas). If petroleum deposits exist at even greater depths (as they probably do), it is reasonable to expect that such very deep deposits also will furnish near-surface clues to their existence.

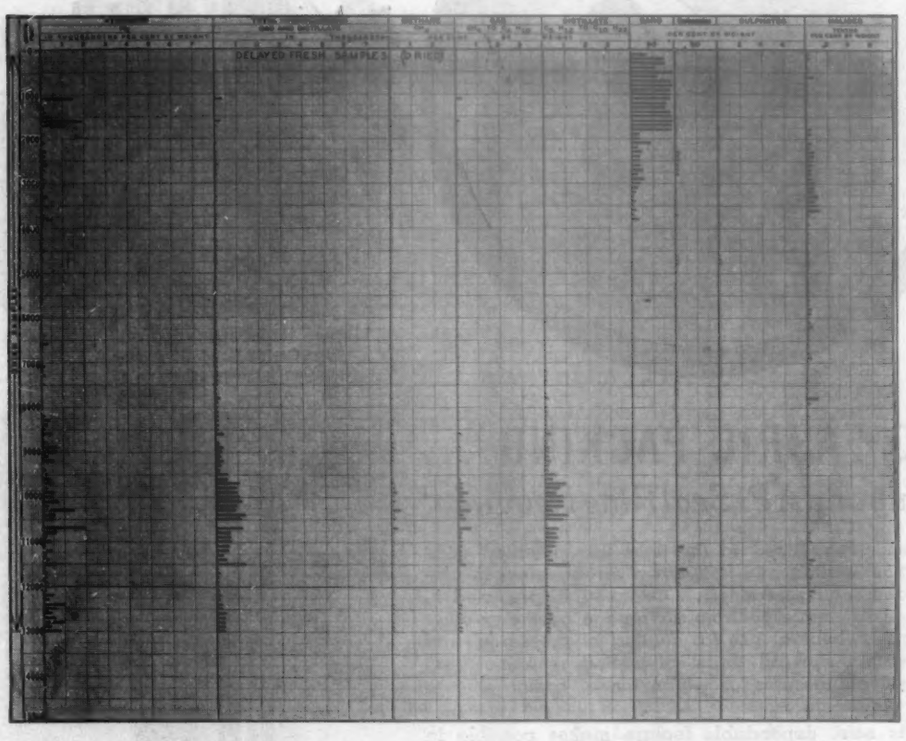
*"Suitcase sand." The salt-water sand which is the signal for the driller to pack his suitcase and leave.

†"Farmer's sand." The saturated oil sand which, as every farmer knows, underlies his land, and above which, a few feet too shallow, every dry wildcat is abandoned.

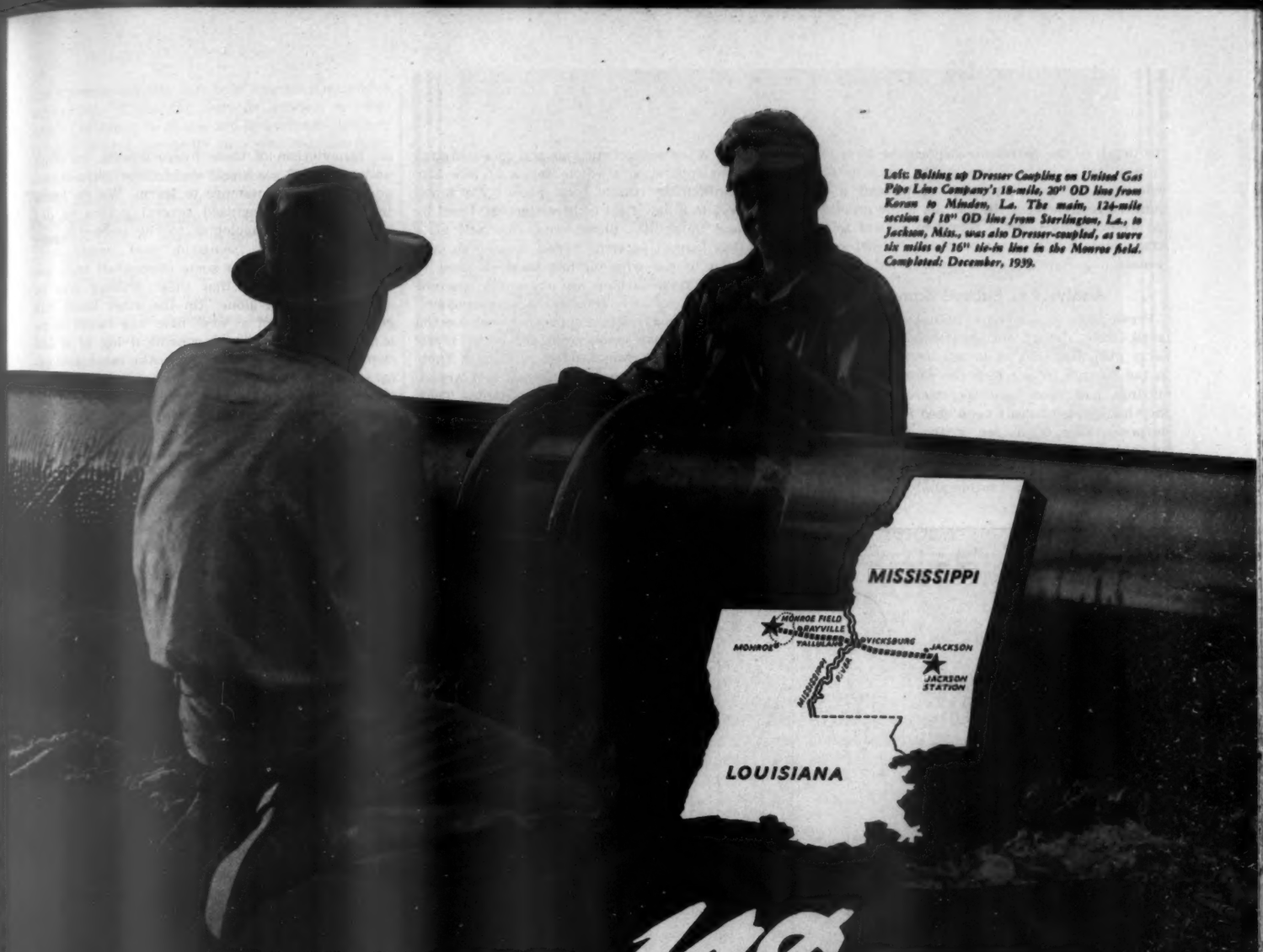
Early Shortcomings

Early in the history of geochemical prospecting, this inability to predict the depth to a petroleum deposit became apparent, and, to say the least, proved to be quite embarrassing at times. The geochemical prospector found himself "out on a limb" when he said that a petroleum deposit existed "here," and the well was dry. Just as the geophysicist had found that the geologist, years before, had overworked the "fault" alibi, so the geochemist found the "drill deeper" alibi pigeonholed as the "farmer's sand," and had to make a start on the solution of this decades-old problem of the depth to the pay horizon.

At present, while the geochemist can't yet tell



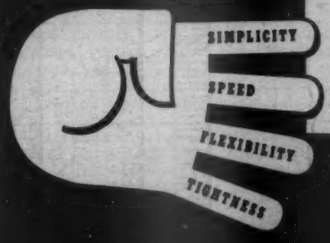
Left: Geochemical log from dried samples of a California well producing from below 13,000 ft. Below: Geochemical log from fresh samples of a dry South Texas wildcat



Left: Bolting up Dresser Coupling on United Gas Pipe Line Company's 18-mile, 20" OD line from Keroun to Minden, La. The main, 124-mile section of 18" OD line from Sterlington, La., to Jackson, Miss., was also Dresser-coupled, as were six miles of 16" tie-in line in the Monroe field. Completed: December, 1939.

ANOTHER 148 MILES OF GAS LINE DRESSER-COUPLED!

Out of the rich Monroe field—into the Jackson-Mobile-Pensacola system—natural gas now flows through the country's most-recently-completed large transmission line. ● To avoid bad-weather delays, the pipe was coated beforehand along the right-of-way. More than 4,000 Dresser Couplings then made jointing a speedy, steady, "one-two-three" operation—in foul weather or fair, without damage to the coating, and with jointing and backfilling always up with the trencher (preventing loss of ditch). ● Dressers also absorbed lowering stresses, eliminated bell-holes, did away with both position jointing and crew back-tracking, and provided for pipe expansion. ● Dresser Manufacturing Company, Bradford, Pa.



the depth to the petroleum deposit, he is at least in position to make a reasonable estimate as to whether the "farmer's sand" is present a few hundred feet ahead of the bit. So, while geochemical well logging is not a complete answer to this fundamentally important problem, at least it represents important progress towards its solution.

Analysis of Subsoil Samples

Previously, it had been standard practice to smell, taste, "ether cut" and analyze cores for assay purposes, that is, to tell if oil or gas were in the horizon from which the core came. While cuttings had been used for micropaleo studies, they had not previously been used for prospecting purposes, that is, to see if the well were approaching a petroleum deposit.

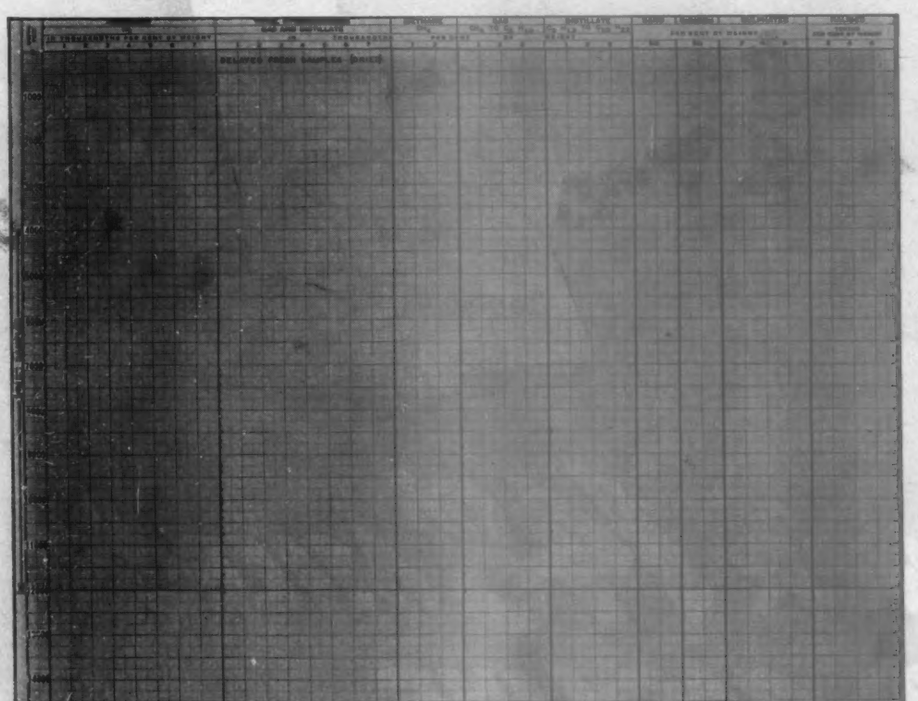
In geochemical prospecting along the surface, we had worked out a routine analysis for subsoil samples. When we ran cuttings and cores through the same apparatus, a whole series of new and quite unfamiliar results took place. We found ourselves in a new field of investigation, beset by new and unfamiliar phenomena. As well after well was logged, patterns began to emerge, and we began to see why oil has been so hard to find. These hydrocarbons are abysmally ignorant as to depth, geology, geochemistry, geophysics, or even geography. They apparently behave the same whether they come from depths of 13,000 ft. in California, or from 2,000 ft. in Illinois. Their similar behavior in Texas, Louisiana, and Arkansas indicate their truly cosmopolitan nature. That, perhaps, was to be expected, for the petroleum accumulation took place long before names were chosen for the type localities of the Frio, Cockfield, and Yegua.

Although we recognize the more or less universal behaviorism of these hydrocarbons, we don't understand all we know about these phenomena, and we have a lot more to learn. We do know that we have recognized several grades of dry holes, and, with apologies to the meteorologist, can talk of "arid," "semiarid," and "semihumid" dry holes. The logs of some abandoned tests are such as to indicate that their drilling was of academic interest alone. On the other hand, the geochemical log of a "dry" hole was found to be a Chinese copy of the geochemical log of a discovery well not too far away, in the same geological section. In another case, production was established because of the geochemical log in a zone where the electrical log indicated no sand, let alone "saturation." Geochemical well logging indicates that there is still room for improvement in the vitally and fundamentally important field of well completion, in spite of the tremendous progress made there in the last few years.

Significance of Cuttings

After all, the really remarkable thing is that these significant data can be and are secured by the analyses of the cuttings obtained in routine drilling. Consider the "life" of a cutting sample, buried for millions of years at various depths and under various pressures, then suddenly chipped off from the bed rock, swirled and washed around by drilling mud (made up of more weird ingredients than a pousse cafe, and pumped under pressure through the drill stem with grease lubricated joints) to the surface of the earth, and thus exposed to radically lower temperatures and pressures in a very short time interval. Even after such treatment, the cuttings contain significant constituents in amounts which vary in regular patterns with depth. Not only that, but after washing, drying, and a considerable amount of shelf life, their analyses often yield information of economic value.

These geochemical well logs have proved that the geochemical influence of a petroleum deposit extends vertically, and horizontally as well, outside the limits of production. For exploration purposes, that indicates that the effective depth and



Left: Geochemical log of a hole which was drilled to below 12,000 ft. before it was abandoned; dried samples were used. Below: Geochemical log made from fresh samples on a Texas Gulf Coast discovery well

the diameter of the test hole has been extended materially. Thus, the various grades of "dry holes," referred to above, are determined by their relative lateral proximity to a petroleum deposit.

Utility Taking Concrete Form

The practical utility of geochemical well logging is taking concrete form. To date, it has become apparent that at least the following information is secured by this recently developed technique:

1. "Dry" holes can be graded qualitatively as to their closeness to a petroleum deposit.

2. Zones can be recognized which are practically barren of petroleum, and so need not be cored.

3. Zones can be recognized which contain significant amounts of petroleum hydrocarbons, and which, therefore, should be carefully cored. Such zones may contain high-pressure gas, and precautions can then be taken in anticipation of a possible blowout.

4. The vertical extent of such potentially significant zones can be recognized. That is, the geochemical log shows when the drill has passed through such zones of higher concentrations, and rational plans then can be made as to the advisability of further deepening.

5. The geochemical well log distinguishes between the high pressure due to gas and the high pressure due to salt water, a problem which recently has become of interest in the Gulf Coast.

6. "Dry-hole prospecting" is made possible, by grading the geochemical logs of dry holes on a prospect as to their qualitative proximity to a petroleum deposit if one is present nearby. In conjunction with other available subsurface information, such a geochemical study may narrow materially the choice of the location for the next test well.

7. Significant structural variations cannot be expected at shallow depths over stratigraphic traps and deep-seated, low-relief structures. In these cases, the lateral variations displayed by geochemical well logs makes "slim hole" testing of considerable utility in locating the petroleum deposit itself as well as its areal extent.

8. In effect, the geochemical well log extends the vertical penetration of the bit downward some 500 to 1,000 ft., and laterally as much as ¼ to ½ mile, permitting the qualitative estimation of the extense of a petroleum deposit in those adjacent sediments not penetrated by the bit.

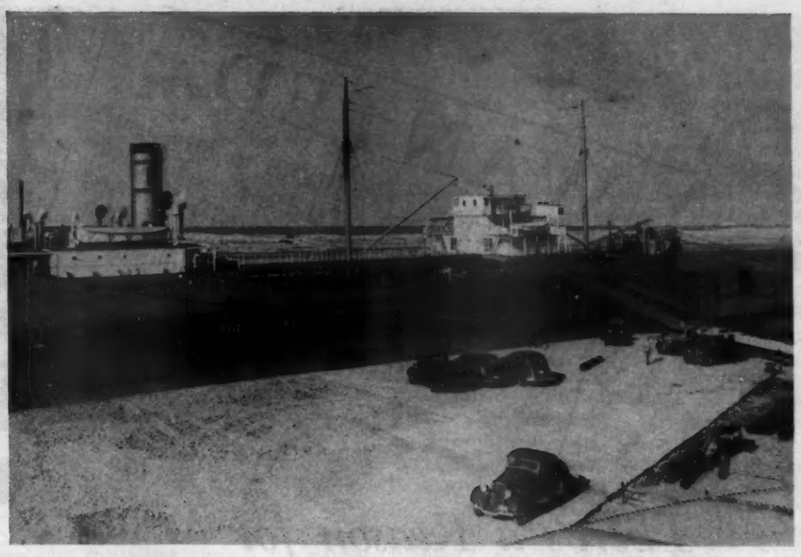
9. The geochemical well log contributes independent quantitative evidence as to the presence or absence of "shows," and, if such are present, the log indicates the relative percentage of "gas" and "distillate" hydrocarbons present over the full range of section in which such appreciable concentrations occur. The concentration depth patterns of these significant hydrocarbons are of considerable importance in estimating the production possibilities of the test.

Lack of Basic Data

The data from geochemical well logging will prove useful in the reconstruction of the history of the accumulation itself, and, eventually will aid in the formulation of rational hypotheses as to the origin of petroleum itself. At the present time, our lack of basic data on these two subjects permits speculation only on this important problem.

Geochemical well logging has been introduced only within the last few months, and has already found its place in the petroleum industry. As has been true of other forms of well logging, such as electrically and by micropaleontology, this relatively new exploration technique undoubtedly will become a routine operation in the greater part of the drilling done by the petroleum industry.

(Geochemical well logging has been described in detail in Supplement No. 1 to "The Handbook of Geochemical Prospecting," by E. E. Rosaire.)



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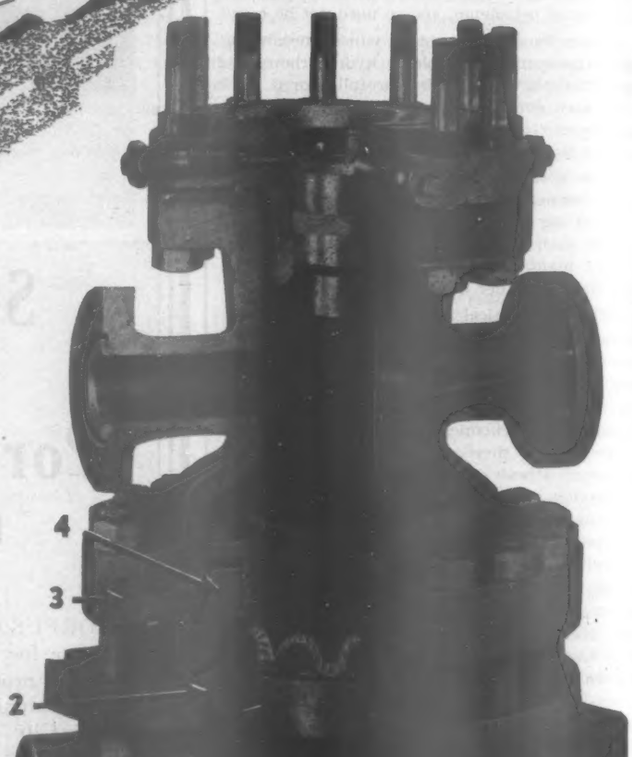

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Sparta-Wilcox Trend Again in Limelight of Gulf Coast Activity

By F. L. SINGLETON

STIMULATED by recent discoveries, the Sparta-Wilcox trend is again in the limelight of Gulf Coast operations, and a further expansion of drilling is anticipated. Recent developments include the opening of a field in Beauregard Parish, coastal Louisiana, and the Thomaston field, De Witt County, in South Texas. The latter field is the first production in the county and the first in Southwest Texas to produce from the Wilcox, extending the line of such fields southward more than 160 miles through virgin territory.

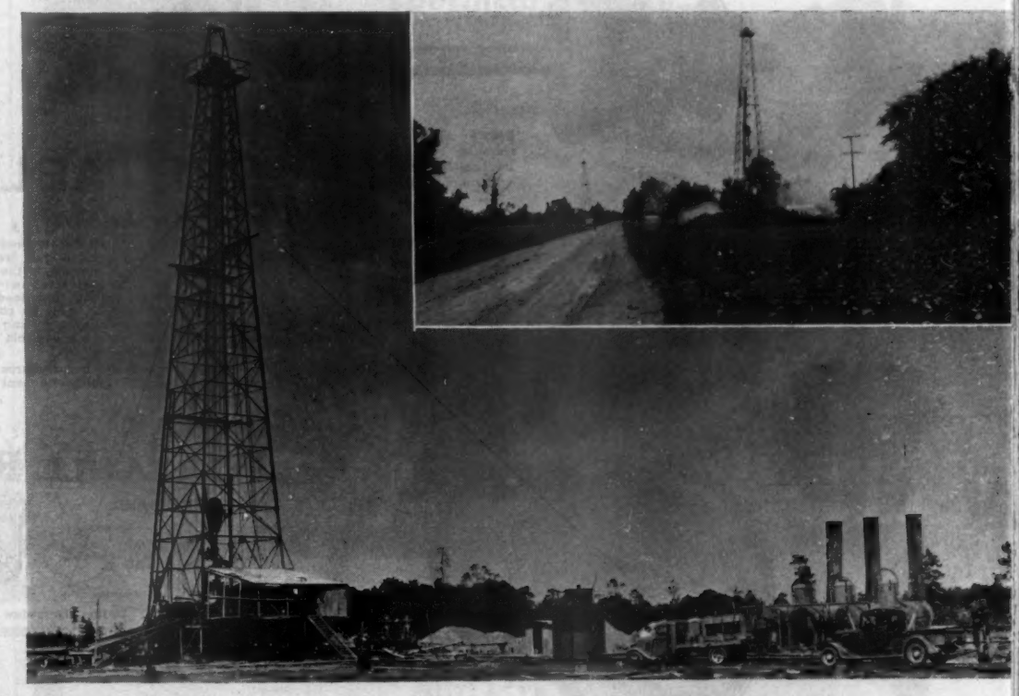
These discoveries were opened at a time when interest in the trend was at a low ebb as the result of a discouraging wildcatting program during the past 13 months which followed the opening of the Eola field in Avoyelles Parish in January last year. This prospective trend represents an immense area extending several hundred miles across the northern tier of counties and parishes through the upper Texas coast and South Louisiana, and southwestwardly along the old Jackson shore-line trend as far south as the Rio Grande embayment. While first production from the Wilcox was opened on the trend in 1937, development over a period of 2 years has been spasmodic and it is probable future operations will be carried on in the same manner.

Since the discovery of the Joe's Lake field in Tyler County, which established the first Wilcox production in the Gulf Coast area, interest in the trend has been revived at various times with such discoveries as Villa Platte, Evangeline Parish, and the opening of Wilcox production in the Ace and Segno fields, Polk County; Cleveland, Liberty County, and Sparta production at Cheneyville in Rapides Parish. While these discoveries represented several million barrels in additional reserves, they failed to arouse general interest, and it was not until the discovery of the Eola field in January 1939 that the trend was fully recognized as a large area of unexplored potential territory.

The discovery well of the Eola field in southwestern Avoyelles Parish was drilled by S. W. Richardson on the Haas Investment Co. lease and was completed in 105 ft. of oil sand at 8,442-8,548 ft. for an initial production of 275 bbl. per day flowing through a ⅛-in. choke. The field was established as a major discovery within a short time by an extensive drilling campaign by major and independent companies. At the close of 12 months' development, more than 60 producers had been completed extending production over approximately 3,000 acres, and the structure is still undefined to the northeast and southwest.

Since the discovery of the Eola field, the only Wilcox production opened was at Villa Platte, Evangeline Parish, where deeper drilling on the southeast flank of the structure by Continental Oil Co. opened prolific production from a sand section at intervals from 10,100-10,250 ft. Recent developments indicate the deep sand overlaps most of the shallow production which is from the Sparta formation as well as a large area around the flank of the original structure.

Enhanced by these discoveries, the Texas and Louisiana sector of the Gulf Coast region received an extensive wildcatting program with practically every county and parish within the line of development receiving one or more deep tests. While subsurface conditions of the Wilcox is still meager, the wildcatting program has furnished valuable geological information and operators interested in the trend are now able to carry on exploration work with more assurance.



The large picture shows Wilcox sand discovery well in Beauregard Parish, Louisiana. Inset: Wilcox sand development has caused intense activity in the Eola field, Avoyelles Parish, Louisiana

Lack of Detailed Geophysical Work

Most observers agree that the large number of failures recorded on the trend resulted from lack of detail geophysical work. Most of the wells were either drilled on the strength of old shooting dope accumulated several years ago during the search for Cockfield production, and more recently by hurried spot shooting which followed the discovery at Eola. It is fairly well established that such structures as Eola and Villa Platte are going to be much harder to find, and the old geophysical methods used in locating domal-type structures will not be very successful in this area due to the irregular terrain and heavily-wooded lands that prevail over most of the area. It has also been found by the recent discovery in Beauregard Parish that one dry hole does not necessarily condemn an area, and for these reasons, many of the prospects abandoned as the result of dry holes are being rechecked with detail geophysical work and the chances are several will be redrilled.

The Neale field, northwestern Beauregard Parish, was opened in the latter part of March by Atlantic Refining Co.'s No. 1 D. A. Whitmer. The well is about 2 miles southeast of the company's No. 1 Rice Land & Lumber Co. a dry hole abandoned in July 1939 at a total depth of 8,518 ft. While development is limited to the one well, the structure does not appear to be as prolific as the Eola field as production is from a much thinner sand section. Production was developed from approximately 17 ft. of sand in the upper Wilcox whereas at Eola as much as 105 ft. of sand has been logged. The Whitmer well was drilled to a total depth of 8,617 ft. and the completion was made by perforating casing at 8,356-73 ft., several feet above the water level in view of the fact that previous testing at 8,412-16 ft. recovered some oil and a large percentage of salt water.

While no new Wilcox sand producing fields have been added to the upper Texas Coast, two wildcats in Montgomery and Wharton counties were in the process of testing and, regardless of the outcome, the showings encountered are considered significant enough to create additional drilling. On the Lissie prospect, northeastern Wharton County, Strake Petroleum Co.'s No. 1 Poole topped the Wilcox at approximately 9,700 ft., and the company is testing the interval from 9,900-10,000 ft. The well has flowed oil and tested several hundred pounds gas pressure on several tests, but due to salt-water encroachment no successful completion has been made. In the Tamina area, southern Montgomery County, David B. McDaniel has cemented approximately 9,600 ft. of 7-in. casing preparatory to testing No. 1 Hattie Baldwin. This well has been drilled extremely tight, and no information has been released as to where the well will be tested. Another attractive area in which

Rotary shaft assembly, showing cone type friction clutch which is hydraulically operated.

Drum clutch assembly, showing steel spider, extra thick clutch lining and heavy-duty roller bearings.

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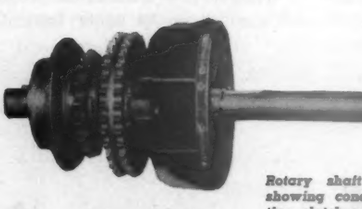
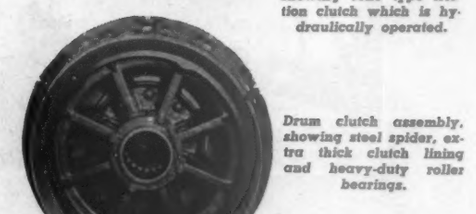


Rotary clutch drive.



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additional development is expected is the Garwood area, Colorado County, where W. R. Davis & Co. recently abandoned No. 1 J. R. McLane. The Wilcox was topped at approximately 9,300 ft., and several sands showing gas and distillate were logged, but the sands were found to be too tight to produce in commercial quantities.

In addition to the 12 wildcats drilling or scheduled to be drilled, renewed interest in the trend is reflected in the number of active geophysical crews, and the increasing leasing activity. There are more than 27 crews working in the area, and this number is expected to be increased within the next few weeks. Drilling or proposed Wilcox tests are Shell Oil Co., Inc.'s No. 1 Plow Realty Co., Colorado County; L. J. Session's No. 1 Barry, Grimes County; Gulf Oil Corp.'s No. 1 Kirby Lumber Co., Liberty County; Continental Oil Co.'s No. 1 Bender estate, Montgomery County; Shell Oil Co., Inc.'s No. 1 Santa Fe Tie & Lumber Co., San Jacinto County; J. A. Deering's No. 1 Bohne, and Mout Selan Oil Co.'s No. 1 Fritz in Washington County.

Probably the outstanding development was the recent discovery of the first Wilcox production in Southwest Texas by completion of Atlantic Refining Co.'s No. 1 Conwell, just west of the town of Thomaston in De Witt County. Drilled to a total depth of 8,519 ft., it was completed as a large distillate producer by perforating casing in the Wilcox sand at 7,855-85 ft. The top of the Wilcox and details of the sand section have not been released by the company, although it is generally believed the well is producing from the upper Wilcox in view of the fact that drill-stem testing at intervals from 8,000 ft. to 8,200 ft. recovered salt water.

The extension of the Wilcox play into Southwest Texas began the latter part of 1939 by the drilling of two Wilcox tests at the West Tuleta field, Bee County, and at the old Bruni field, Webb County. These wells attracted wide attention and additional light was thrown upon the Wilcox possibilities when extremely high gas pressures encountered in the Sparta and Wilcox formations resulted in blowouts at both tests. Mechanical trouble developed, and the West Tuleta well was plugged back from a total depth of 7,912 ft., and was abandoned after testing dry in the Yegua and Pettus horizons. The Bruni test was plugged back from a depth of 8,959 ft. and was completed as a small producer in the Queen City formation at approximately 5,600 ft.

As a result of these developments, the old Jackson shore-line trend, extending through the Pettus-Laredo area as far south as the Rio Grande embayment, is receiving its first deep-drilling program, and with the opening of production in De Witt County, this program is expected to gain momentum.

At a recent date there were three active wells drilling, one well was testing and several additional wells were scheduled to be started. In the West Tuleta field, Bee County, Mills Bennett Production Co. and Anderson-Prichard Oil Corp. apparently opened the first production from the Carrizon in Southwest Texas as the well was showing for a distillate producer while testing through perforated casing at 7,525-35 ft. This well was drilled to a total depth of 9,200 ft., and several tests made in the Wilcox recovered distillate, gas and salt water. Drilling has progressed below 9,000 ft. at Union Producing Co.'s No. 56 Ray in the old Pettus field, Bee County, while near the town of George West, Live Oak County, Edwin M. Jones' No. 1 West is drilling below 10,425 ft. This well topped the Wilcox at 7,450 ft. and casing will be cemented for a production test as it attempted to blow out while drilling at 9,516 ft., and an electrical survey is reported to have shown favorable indications. This is the first well in this area to be drilled below 10,000 ft. In Webb County Sinclair Prairie Oil Co. is drilling below 6,600 ft. in No. 1 Callahan ranch, while at the Bruni field, Webb County, Tide Water Associated Oil Co. is preparing to drill its second deep test, No. 8 Bruni, an offset to the abandoned hole.

The outcrop of the Wilcox in Southwest Texas has been mapped southwestward along the east boundary line of the old Balcones fault-line district extending to the Rio Grande embayment. Production from the Sparta-Wilcox series is expected largely between 5,000-ft. and 9,000-ft. levels. The 5,000-ft. level is generally considered as the upper limit of production in view of the large amount of fresh-water sands at the outcrop which has prevented the accumulation of oil at lesser depths.

Present production from the oil and gas fields located within this trend is largely from the Oligocene and upper Eocene formations with most production being developed at intervals from the Catahoula formation to the Cockfield formation. The deepest production, while limited to a few fields, is from the Queen City formation and is productive in the Carolina-Texas field, Webb County, Lopena, Zapata County and the Roma field in Starr County. There are numerous shallow fields within the line of the present deep-drilling program, and all can be classified as prospects as the result of recent developments.

In view of the large expenditure necessary to carry on the deep-drilling program it will likely result in the trend's future being one of prolonged development. The blowout of the two wells at West Tuleta and Bruni have indicated that sand stringers in the upper sections of the Sparta-Wilcox are highly charged with gas, and it has become a common drilling practice to cement a long string of protection casing as a precaution against blowouts. It has been estimated that more than $1,500,000 has been invested in the present deep-drilling program.

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Record Keeping Reduces Costs, Increases Rotary Rig Efficiency

By HARRY F. SIMONS

DRILLING in the Gulf Coast area has been getting steadily deeper as the more obvious shallow reservoirs are exploited, leaving the search for reserves to be directed toward the lower levels. While better geophysical methods have played an important role in finding prospects favorable for drilling, the advances toward greater depths have been made posible by the study of conditions encountered and the development of equipment and technique necessary to overcome the obstacles.

One method used by a Houston contractor, Harry L. Edwards Drilling Co., has been exceptionally useful in predicting costs of proposed tests. It provides the oil company with a permanent record of all the essential facts and makes it possible for the drilling superintendent to apply preventive measures instead of the more expensive remedial ones. This latter is an important factor as experience in the Gulf Coast has shown that many blowouts, much of the trouble getting through salt water flows and heaving shale beds, and many of the stuck strings of pipe could have been avoided if the occurrence of these difficulties had been anticipated.

The system consists essentially of compiling in concise form all of the pertinent data developed by drilling each test; in itself the record summarizes Gulf Coast drilling problems and practices. At the completion of each test drilled, Edwards provides the oil company with a report on the well, together with a summary of difficulties encountered and suggestions for combating them in the future. The report includes two charts, one showing mud conditions and mud treatment throughout the drilling of the well and the other showing all pertinent drilling and completion information.

Both charts are made on graph paper, the drilling-curve chart showing the footage made each day, the driller's log of the well, the bit record, core record, breakdown of drilling time, casing and tubing record, the screen assembly and the size of the hole at various depths. In case the well is directionally drilled, orientation points and the amount of deviation also is shown graphically.

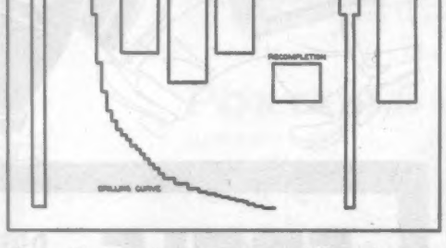
The mud chart includes a driller's log of the well, the mud weight, viscosity, per cent of solids, and sand content at the flow line and at the pump suction for each hour the well was drilling. It also includes a summary of the material used in conditioning the mud used in the well Later charts are also including the pH reading of the mud hourly.

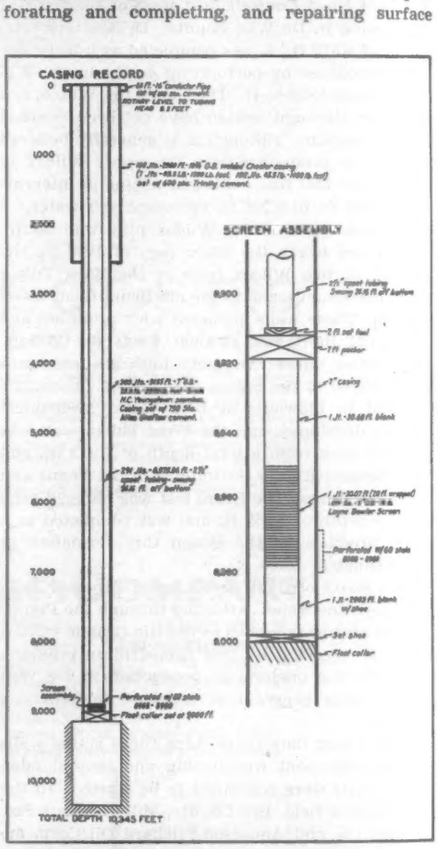
Drilling Chart

The information contained on the drilling chart is obtained directly from the driller's report, which includes standard information such as formation drilled, make of bits run and pulled, number of hours drilling, number of hours lost and the cause, the amount and size of the pipe in the hole, number and size of drill collars, and feet of kelly through the rotary table. The latter three items are important in case a fishing job occurs as there is then no doubt as to what has been left in the hole.

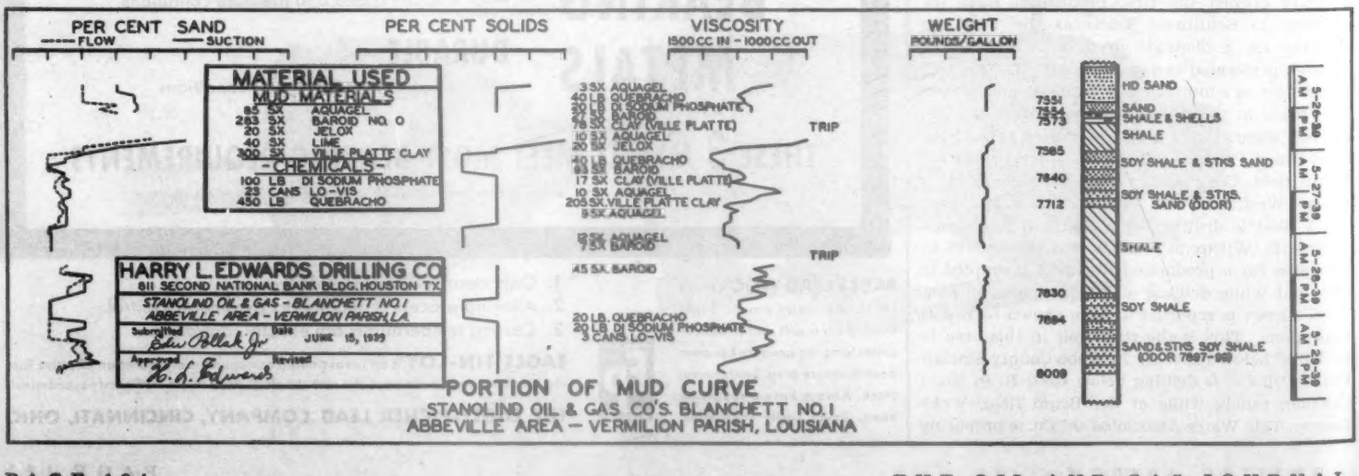
The driller's log has been found useful by many companies for correlation with the geologist's log and the electrical logs taken on the well. In case the well is a failure at lower depths it may be used as a guide in side-wall coring in search of thin sands that may be productive. It provides the driller with a guide for choosing the bits run on future wells in the same or a similar area.

The drilling curve is plotted on the vertical scale parallel to the driller's log; the horizontal scale is used for the time. Notes along the drilling curve include the number of hours drilled each day, number of slope tests, number of trips, time spent fishing, coring and reaming, electrical logging, setting of casing, waiting on cement, perforating and completing, and repairing surface





Above: Diagram showing layout of drilling chart: the work sheet is 50 by 30 in. Right: Casing record and screen assembly show all pertinent completion data. Below: Portion of the graphic mud record. The data is kept on 60 by 40 in. paper with 1 in. equal to 1 day



PORTION OF MUD CURVE
STANOLIND OIL & GAS CO'S. BLANCHETT NO. 1
ABBEVILLE AREA — VERMILION PARISH, LOUISIANA

equipment. The average drilling time at any certain depth, the formation being drilled, and any difficulties are obtained at a glance at the chart. If further details are required, the driller's report for the particular day can be easily found.

The bit record includes the number of the bit run in the hole, the size and make of the bit, the depth at which it was run, the depth at which it was pulled, and the amount of hole each bit cut. It becomes an easy matter to determine whether to use a bit similar to the one used on the last well at a similar depth or to select another type in an effort to obtain more hole. The illustration shows that on the particular well, fish tail or drag bits were used almost entirely for drilling the entire hole to below 9,000 ft.; the exceptions were at coring and reaming points and one rock bit used to drill 8 ft. of hard sand at 8,739 ft.

Below 9,000 ft. the drilling was much harder, but drag bits made most of the footage, the summary revealing that the eight rock bits cut only 641 ft. of the 10,345 ft. The fact that drag bits can be used for such a large portion of the hole is responsible for the rapidity with which wells are drilled and also effects a saving for the contractor in the bit costs.

The breakdown on the chart is interesting as it shows that much of the drilling time is spent in doing things other than actually making the hole, the basis on which the contractor is paid. Of the total 1,045 hours consumed in drilling the well, only 424 hours were spent in drilling and 292 hours spent in making trips. Coring, electrical logging, running and cementing casing, and completion of the well required almost 500 hours.

Gulf Coast practice of obtaining cores with a wire-line core barrel is shown in the core record, although for cores the hole is reduced and then reamed afterward. This provides a leeway in determining whether the casing is to be set through

Illustration of drilling curve and other well data. Drilling curve has been reduced to 20 per cent actual size while the bit record, etc., has been reduced to 50 per cent

BIT RECORD

NO	Make	Size	From	To	Ft.Ct
1	G.H.F.T.	22"	0	75	75
2	G.H.F.T.	15"	75	2571	2496
3	Hum.F.T.	9 7/8	2571	4250	1679
4	G.H.F.T.	9 7/8	4250	5448	1198
5	G.H.F.T.	9 7/8	5448	5949	501
6	G.H.F.T.	9 7/8	5949	6169	220
7	G.H.F.T.	9 7/8	6169	7025	856
8	G.H.F.T.	9 7/8	7025	7632	607
9	G.H.F.T.	9 7/8	7832	8376	544
10	G.H.F.T.	9 7/8	8376	8544	168
11	G.H.F.T.	9 7/8	8544	8650	106
12	P.C.B	7 5/8	8650	8738	88
13	P.C.B	7 5/8	8738	8739	1
14	H2^{c}RB	9 7/8	8650	8739	R.89
14	H2^{c}RB	9 7/8	8739	8747	8
15	P.C.B	7 5/8	8747	8858	111
16	P.C.B	7 1/2	8858	8989	131
17	P.C.B	7 1/2	8989	9050	61
14	H2^{c}RB	9 7/8	8747	9050	R303
18	P.C.B	7 5/8	9050	9113	63
19	P.C.B	7 5/8	9113	9153	40
20	P.C.B	7 1/2	9153	9211	58
21	P.C.B	7	9211	9229	18
14	H2^{c}R.B.	9 7/8	9050	9229	R 179
22	P.C.B	7 5/8	9229	9238	9
23	P.C.B	7 5/8	9238	9275	37
24	P.C.B	7 1/2	9275	9275	0
25	H2^{c}RB.	9 7/8	9229	9275	R 46
25	H2^{c}RB	9 7/8	9275	9282	7
26	P.C.B.	7 5/8	9282	9288	6
27	H.C.B.	7 5/8	9288	9348	60
25	H2^{c}RB.	9 7/8	9282	9348	R 73
25	H2^{c}R.B.	9 7/8	9348	9353	5
28	Rd.RB. D-K	9 7/8	9353	9476	123
29	Rd.RB. D-K	9 7/8	9476	9640	164
30	Rd 3W.CB.	9 7/8	9640	9668	28
31	Rd.RB D-K	9 7/8	9668	9672	4
32	H2^{c}R.B.	9 7/8	9672	9775	103
33	Rd 3W.CB	9 7/8	9775	9842	67
34	Rd 3W CB	9 7/8	9842	9845	3
35	H. C. B.	7 5/8	9845	9865	20
36	Rd.RB. D-K	9 7/8	9845	9865	R 20
36	Rd.RB.D-K	9 7/8	9865	9955	90
37	Rd. 3W CB	9 7/8	9955	10046	91
38	Rd 3W CB	9 7/8	10046	10084	38
39	Rd 3W CB	9 7/8	10084	10161	77
40	Rd 3W CB	9 7/8	10161	10165	4
41	Rd RB DK	9 7/8	10165	10302	137
42	Rd 3W CB	9 7/8	10302	10345	43

SUMMARY -

No	Make	Size	Ft Ct
1	G.H.F.T.	22	75
1	G.H.F.T.	15	2496
1	Hum.F.T.	9 7/8	1679
8	G.H.F.T.	9 7/8	4400
3	H 2^{c}RB	9 7/8	123
6	Rd-RB DK	9 7/8	518
8	PCB	7 5/8	355
4	PCB	7 1/2	250
1	PCB	7	18
2	HCB	7 5/8	80
8	Rd 3W CB	9 7/8	351

BREAKDOWN

OPERATION	HRS.
Rig Up	24
Drill	424
Core	275
Ream	49
Slope Tests	21
Trips	292
Fishing	24
Repair Rig	68
Schlumberger	26
Set & Cement Casing	157
Lay Down Drill Pipe	11
Perforate	12
Bring In Well	10
Tear Down	8

CORE RECORD

Pennington Core Barrel

NO.	From	To	Ft.Ct	Rec.	% Rec
1	8650	8659	9	8	88
2	8659	8666	7	7	100
3	8666	8675	9	9	100
4	8675	8684	9	9	100
5	8684	8693	9	9	100
6	8693	8701	8	8	100
7	8701	8710	9	9	100
8	8710	8715	5	5	100
9	8715	8722	7	7	100
10	8722	8731	9	7	77
11	8731	8738	7	7	100
12	8738	8739	1	0	0
13	8747	8756	9	3	33
14	8756	8764	8	8	100
15	8764	8773	9	9	100
16	8773	8782	9	9	100
17	8782	8791	9	9	100
18	8791	8800	9	9	100
19	8800	8806	6	6	100
20	8806	8815	9	9	100
21	8815	8824	9	9	100
22	8824	8833	9	9	100
23	8833	8840	7	3	43
24	8840	8849	9	9	100
25	8849	8858	9	9	100
26	8858	8865	7	7	100
27	8865	8874	9	9	100
28	8874	8883	9	5	55
29	8883	8892	9	3 1/2	39
30	8892	8901	9	9	100
31	8901	8910	9	9	100
32	8910	8919	9	9	100
33	8919	8926	7	7	100
34	8926	8935	9	9	100
35	8935	8944	9	9	100
36	8944	8953	9	9	100
37	8953	8962	9	9	100
38	8962	8971	9	9	100
39	8971	8980	9	9	100
40	8980	8989	9	9	100
41	8989	8998	9	9	100
42	8998	9007	9	7	77
43	9007	9014	7	6	86
44	9014	9023	9	9	100
45	9023	9032	9	7	77
46	9032	9040	8	8	100
47	9040	9048	8	8	100
48	9048	9050	2	2	100
49	9050	9059	9	9	100
50	9059	9068	9	9	100
51	9068	9077	9	9	100
52	9077	9086	9	9	100
53	9086	9095	9	9	100
54	9095	9102	7	7	100
55	9102	9111	9	9	100
56	9111	9113	2	1	50
57	9113	9122	9	7	77
58	9122	9131	9	9	100
59	9131	9140	9	9	100
60	9140	9149	9	9	100
61	9149	9153	4	4	100
62	9153	9161	8	8	100
63	9161	9170	9	9	100
64	9170	9179	9	9	100
65	9179	9188	9	9	100
66	9188	9197	9	9	100
67	9197	9206	9	9	100
68	9206	9211	5	4	80
69	9211	9219	8	6	75
70	9219	9224	5	5	100
71	9224	9229	5	5	100
72	9229	9237	8	7	88
73	9237	9238	1	1	100
74	9238	9247	9	9	100
75	9247	9256	9	9	100

CORE RECORD - Continued.

PCB | HCB | Reed Core Barrel

NO	From	To	Ft.Ct	Rec	% Rec
76	9256	9261	5	5	100
77	9261	9270	9	9	100
78	9270	9275	5	5	100
79	9282	9288	6	2	33
80	9288	9308	20	18	90
81	9308	9328	20	10	50
82	9328	9348	20	20	100
83	9640	9650	10	10	100
84	9650	9660	10	10	100
85	9660	9667	7	7	100
86	9775	9785	10	10	100
87	9785	9791	6	6	100
88	9791	9801	10	9	90
89	9801	9806	5	5	100
90	9806	9816	10	10	100
91	9816	9826	10	10	100
92	9826	9836	10	10	100
93	9836	9842	6	6	100
94	9842	9845	3	2	66
95	9845	9865	20	20	100
96	9955	9965	10	10	100
97	9965	9975	10	10	100
98	9975	9985	10	9	80
99	9985	9995	10	10	100
100	9995	10005	10	10	100
101	10005	10015	10	10	100
102	10015	10025	10	3	30
103	10025	10035	10	10	100
104	10035	10036	1	1	100
105	10036	10046	10	10	100
106	10046	10056	10	10	100
107	10056	10066	10	10	100
108	10066	10076	10	10	100
109	10076	10084	8	5	63
110	10084	10094	10	10	100
111	10094	10104	10	10	100
112	10104	10114	10	4	40
113	10114	10120	6	6	100
114	10120	10130	10	10	100
115	10130	10140	10	10	100
116	10140	10150	10	10	100
117	10150	10160	10	9	90
118	10160	10161	1	2/3	66
119	10161	10165	4	3	75
120	10302	10310	8	8	100
121	10310	10320	10	10	100
122	10320	10330	10	10	100
123	10330	10340	10	5	50
124	10340	10345	5	5	100

Reed Core Barrel

SUMMARY -

PENNINGTON CORE BARREL
CUT 623 ft
RECOVERED 585 ft
94.1 % Rec

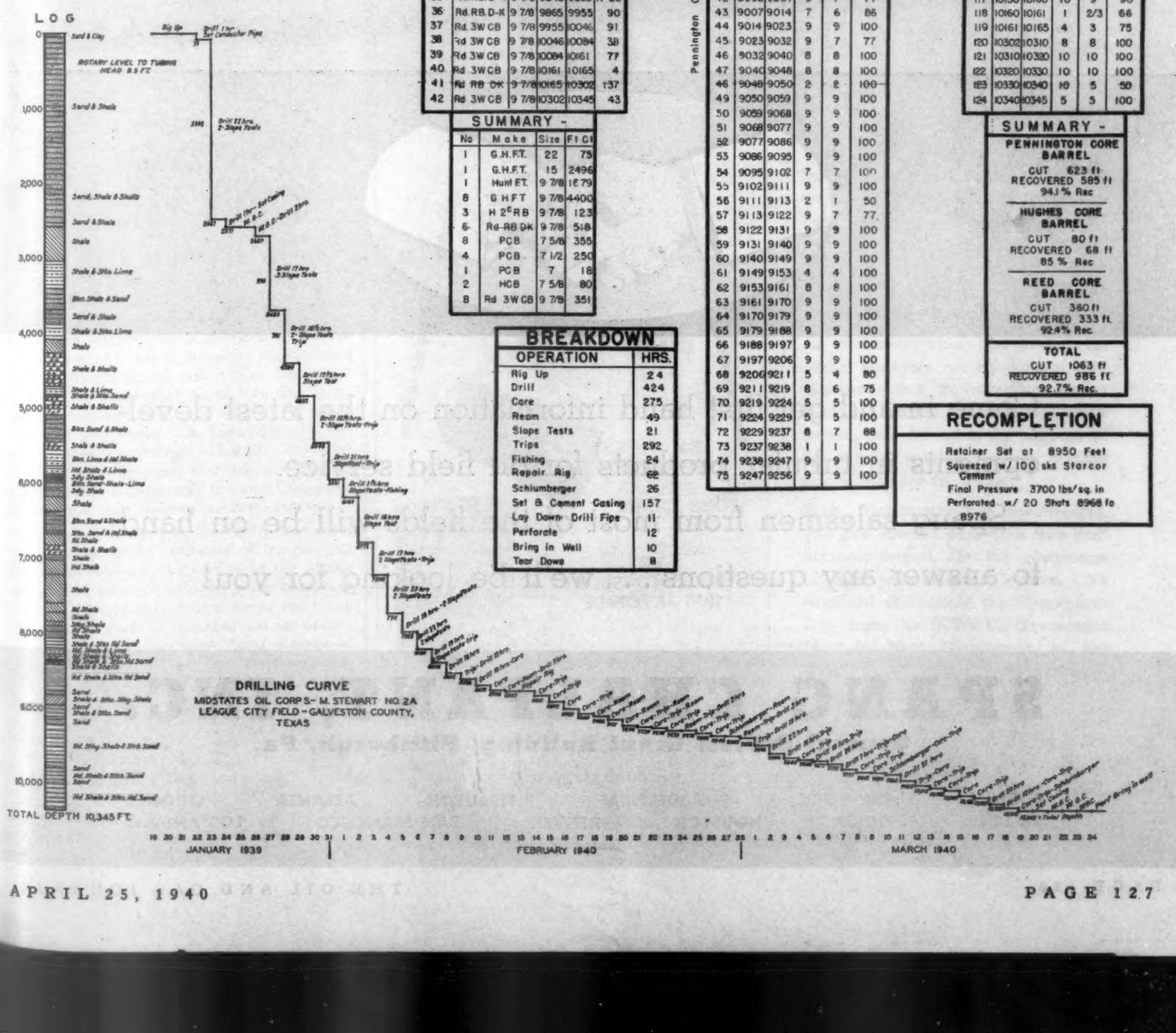
HUGHES CORE BARREL
CUT 80 ft
RECOVERED 68 ft
85 % Rec

REED CORE BARREL
CUT 360 ft
RECOVERED 333 ft.
92.4% Rec.

TOTAL
CUT 1063 ft
RECOVERED 986 ft
92.7% Rec.

RECOMPLETION

Retainer Set at 8950 Feet
Squeezed w/ 100 sks Starcor Cement
Final Pressure 3700 lbs/sq. in
Perforated w/ 20 Shots 8968 to 8976



DRILLING CURVE
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LEAGUE CITY FIELD - GALVESTON COUNTY, TEXAS

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a productive sand or on the top of it. The core record shows that 124 cores were taken between 8,650 ft. and 10,345 ft., an accomplishment that would have required nearly 1,000 hours in making trips if the regular-type core barrel had to be used. Even with the wire-line core barrel, coring time runs up the drilling time substantially as the drilling of more than 8,500 ft. of hole required only 16 days' actual drilling time, while the drilling of the less than 2,000 ft. to the total depth of 10,345 ft. required 30 days. Another interesting item is the per cent recovery from coring attempts, 1,063 ft. being cut and 986 ft. being recovered, or 92.7 per cent of the footage cut.

The casing record included on the drilling graph is a valuable asset to the producer as it provides him with a picture of the equipment in the well, including the upper casing strings, the pay string, location of the perforations, and the size and length of the tubing string. The distance from the top of the rotary table to the top of the tubing head is included as all the measurements while drilling are from the rotary table, which sets on a substructure foundation. In case remedial work is attempted later and a machine rigged up over the well, the correction for obtaining the exact depth can be easily made.

Screen assemblies vary with different operators and on different wells and inclusion of a diagram of the method of completion makes it easy to obtain the information needed before attempting to replace the screen or work over the well.

Mud Chart

Data for the mud chart is obtained from the daily report made by the mud engineers. Most of the oil companies and some of the contractors keep mud engineers on each of their drilling rigs. Edwards keeps two engineers working in shifts to record the condition of the mud and the treatment applied. This relieves the driller of the responsibility of mud treatment and allows him to devote his entire time to drilling. Any changes necessary in the condition of the mud to increase the cutting rate is made by the mud engineer.

The hourly report of the mud engineer includes the weight of the mud in pounds per gallon, the viscosity as shown by a Marsh funnel viscosimeter (1,500 cc. in and 1,000 cc. out) the per cent solids in the mud, the per cent of sand at the flow line and at the pump suction, the pH of the drilling fluid, the treatment being applied, the formation being drilled through, the depth of the hole, and the amount of mud-treating material on hand.

The weight of the mud is kept around 10 lb. if possible. The weight can be reduced by adding small amounts of water if necessary or increased by adding weighting material. The viscosity is kept fairly low to prevent gas-cutting and to increase the settling rate of the sand in the fluid. As the well gets deeper the control of the viscosity becomes increasingly difficult. The mud may be thinned with water and then a weighting material added or chemical treatment may be used. The mud may also require deflocculation.

The per cent of sand at the two points gives an excellent test of the efficiency of the pits and also indicates whether the mud is in the proper condition. The per cent of sand going back into the well is kept as low as possible as the pump liners and pistons will be damaged and the danger of sticking the pipe increased. Sand content at the suction is kept at 3 per cent or less if possible. An interesting check of the driller's log is provided by the sand-content record since any increase in the per cent of sand in the mud is generally preceded by the driller's report on the formation. The efficiency of the mud and pits, as shown by the two curves on sand content, varies between 30 and 60 per cent.

The curves on weight, viscosity, and sand content show the effect of making a trip on the drilling mud, all three values being high right after drilling is resumed and all three decreasing until another trip is made. The following table shows the data included on the mud engineer's report at 2 a.m., just after drilling was resumed, and at 4 a.m., after 9 ft. of hole had been made.

Time	Weight lb./per gal.	Viscosity 1,500 in- 1,000 out	Per cent solids	Per cent sand		Depth (ft.)
				Flow	Suction	
2 a.m.	10.4	58	8	8	3½	7,841
4 a.m.	10.0	45	5	5	3	7,850

Hole being drilled was 12¼ in. with 4½-in. 18.10-lb. per ft. drill pipe with two 6-in. drill collars.

In addition to treatment required for overcoming conditions in the hole, surface conditions often necessitate considerable mud treatment. An example of how this affects the mud costs on a well is shown in the mud chart of the Stanolind Oil & Gas Co.'s No. 1 Blanchett, in the Abbeville area of Vermilion Parish, Louisiana. The well was 7,550 ft. deep and nearing the point at which coring for deep sand was to start. As the drill pipe is stationary while running and pulling the wire-line core barrel the mud must have a high gel strength, fairly high viscosity and be reasonably heavy. The mud was in good condition for coring until heavy rainstorms diluted it. It was then necesary to add 44 sacks of Aquagel, 172 sacks of Baroid, 20 sacks of Jelox, 300 sacks of Villa Platte clay, 40 lb. disodium phosphate, 3 cans of Lo-Vis, and 100 lb. of quebracho. Total amount of these materials used on the well was 85 sacks of Aquagel, 283 sacks of Baroid, 20 sacks of Jelox, 300 sacks of Villa Platte clay, 100 lb. of disodium phosphate, 23 cans of Lo-Vis, and 450 lb. of quebracho. It is evident that the major portion of the amounts added and a large share of the chemicals was required by causes other than those encountered in the hole.

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POLAR CORE ORIENTATION SAMPLE CORE

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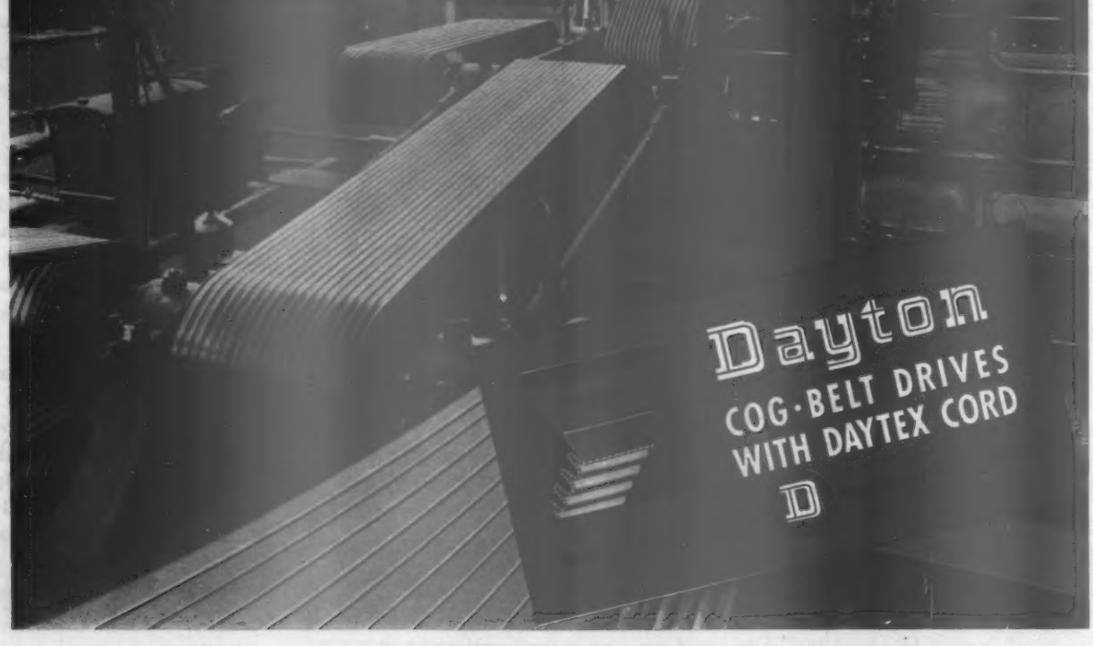


Standardized Layout Decreases Time Required to Assemble Rig

TWO of the problems in connection with deep drilling which face Gulf Coast contractors and oil companies are the handling of the mud and the rigging up preparatory to drilling. The latter is due to the rapidity with which the deep wells are drilled, depths of 10,000 ft. and greater being reached in approximately 30 days and any delays in starting the drilling operations are costly. Mud conditioning and mud handling in many cases have led to the development of some unusual mud systems and also to a standardization which increases the efficiency.

Topographic conditions, while providing some unusual conditions, are generally favorable to a standard layout for the rotary drilling. One Gulf Coast contractor has taken advantage of the flat terrain to design a standard layout which is followed unless ground conditions absolutely forbid it. It includes proper location in relation to the derrick of the mud-circulating pits, the reserve pits, refuse-mud pit, shale pit, and boiler-feed-water pit. When preparing a location for drilling, it is only necessary to furnish the dirt contractor with the diagram.

The boilers are set parallel to the V-door and hoist sides of the derrick with the front end of the nearest boiler 150 ft. from and in direct line with the hole. This automatically locates the boiler feed pumps in proper relation to the pit from which the feed water is obtained. A single steam line can be run from the boilers to the pumps where it divides for supplying power to the hoist and pump.

By locating the center of the first circulating pit in line with the hole and then locating the suction pit at a standard distance from it, the proper location of the mud pumps is very easy. This makes it unnecessary to cut and fit any of the pipe connections for steam or mud lines as the relation of the boilers, pumps, drilling engine and derrick is the same on each job. Any minor errors in measurements can be corrected by adding a short nipple, although generally this is not necessary.

Handling Heavy Equipment

While the handling of the heavy equipment necessary for drilling the deep holes takes a little more time than moving the lighter machinery used in shallower areas, proper transportation equipment cuts the rigging-up time to a minimum. Most of the drilling is done from substructure derricks to allow for the installation of blowout prevention and control equipment. Preparations for drilling generally require only one day before the conductor pipe is set and cemented and drilling of the surface hole started. Surface-casing strings vary in depth, but it generally takes little over 1 day to drill the surface hole to 2,500 ft. or more. Finer details of rigging up can then be accomplished while waiting for the cement to set around the surface pipe.

While the drilling of most of the hole in deep Gulf Coast wells is very easy, due to the poorly consolidated formations, there are quite a few sand streaks and considerable sand contained in the shale beds. The mud pits are therefore designed to allow the settling and removal of the sand from the mud, and at the same time provide a supply of native mud which can be mixed with additives and chemicals in case it is needed. Shale and larger particles of sand and lime are removed on the vibrating screen and dumped into the shale pit; the shale pit is equipped with a jet operated by water or steam which empties the shale into the refuse-mud pit.

The cleaned mud leaving the vibrating screen goes into the settling pit which is 80 by 14 by 5 ft. and has two overbaffles and one underbaffle. The ditch between the settling pit and the suction pit is intentionally not very deep, as this permits the separating the top, and better part of the mud, from the mud containing more sand beneath it. The suction pit has one baffle.

Jets in Settling Pits

Each of the settling pits has a jet for the removal of any solids which may have settled out in them or for removing heavy and viscous mud when water is to be added as a thinner. The jets from the first three settling pits empty into the refuse-mud pit as the bottom mud from these pits generally contains considerable sand. The last settling pit and the first section in the suction pit have jets which empty into the reserve-mud pit. Clean mud is jetted into the reserve pit and every effort is made to keep the reserve pit full so that in case circulation is lost or it is desired to change the mud, a supply is available at little cost. The reserve-mud pit has an earthen partition which divides it into two sections; a boarded ditch with a sliding door is provided for connecting the two sections.

The upper end of the refuse-mud pit also generally contains considerable quantities of clean mud and a jet is provided for transferring this mud into the reserve pit in case it is needed. On wells which make a lot of mud the upper end of the refuse-mud pit is used for storage of clean mud.

The dike or partition between the settling pit and the suction pit is made wide, as the soil has a tendency to cave, and the wider space also provides working room for operation of the mud guns and the laying of the jet lines. Instead of using a central jet line with branches leading off to each jet, individual lines are laid and connected into a manifold near the derrick floor. This eliminates the necessity of adjusting the jet valves before opening the valve on the main jetline. The driller does not have to go very far from his position at the brake to operate the jets.

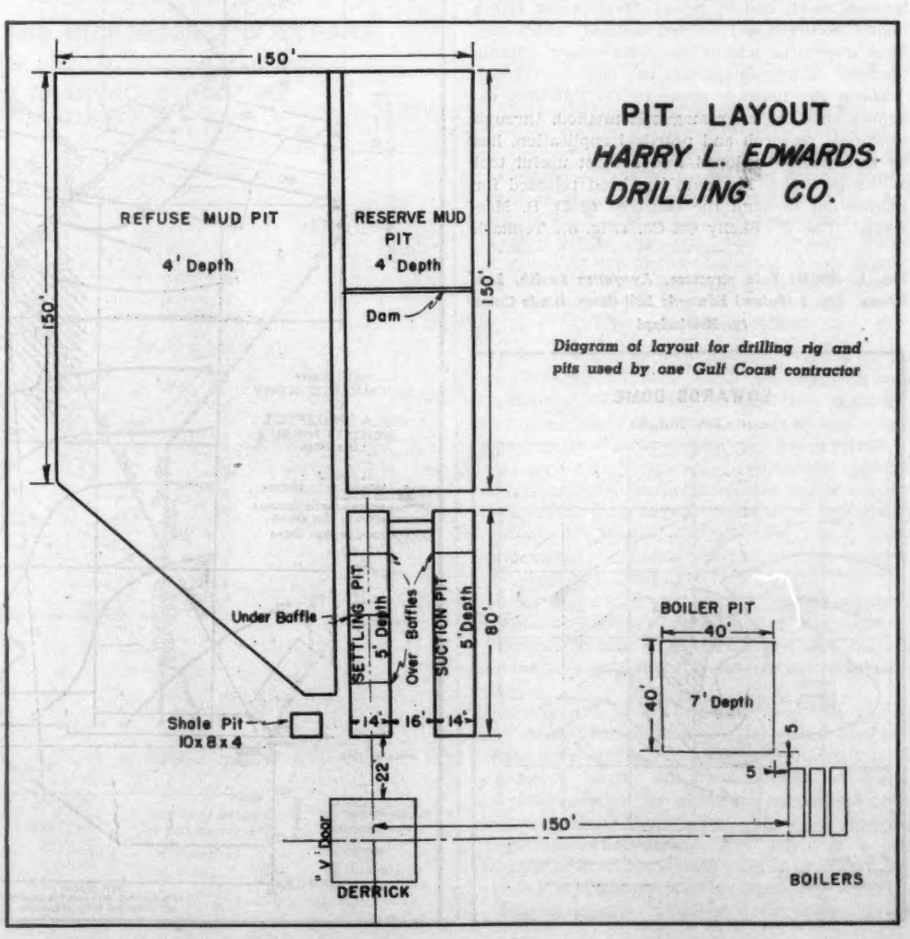


Diagram of layout for drilling rig and pits used by one Gulf Coast contractor

Some Practical Examples of Micromagnetic Prospecting

By W. P. JENNY, Ph.D.

OUT of 1,196 wildcat tests drilled during 1939 in Texas, 1,103 or 92.2 per cent were failures. The high percentage of failures, in the face of greatly advanced geological and geophysical experience, indicates first, that oil is increasingly hard to find; second, that further improvement of known geophysical methods and the development of new methods is essential.

A method which seems to hold out much hope for further improvement is the magnetic method. Its development has been seriously handicapped until recent years by the erroneous assumption that magnetic anomalies are caused almost without exception by the basement complex. During recent years it could, however, conclusively be demonstrated that the majority of magnetic anomalies, especially in areas of thick sedimentation, are due essentially to the magnetic content of certain sedimentary formations and strata. Even where such magnetic beds are at considerable depth and are only slightly stronger magnetic than the surrounding beds, it has been proven by actual experience and results that they can be mapped, if the magnetic survey is conducted with the necessary accuracy.

In order to distinguish between the old magnetic method, dealing essentially with basement igneous rocks, and its newer development into a highly accurate and refined method, which predicts structures within the sedimentary column, the term of micromagnetics has been introduced.

The writer hopes to prove by the following examples that the micromagnetic method, through continued research and practical application, has by now been developed into a most useful tool of the geologist. The data has been released for publication through the courtesy of D. B. MacDaniel (Fig. 3), Skelly Oil Co. (Fig. 5), Tennark Inc. (Fig. 2), and Belcher Production Co. (Fig. 4).

In Fig. 1 is shown in black the preliminary micromagnetic survey in Eola, dated February 2, 1939. At the time of the survey only the discovery well had been drilled; the results of later drilling are shown in green. The full-line contours are established by the wells; the dashed-line extensions are suggested by the micromagnetic survey in conjunction with well data.

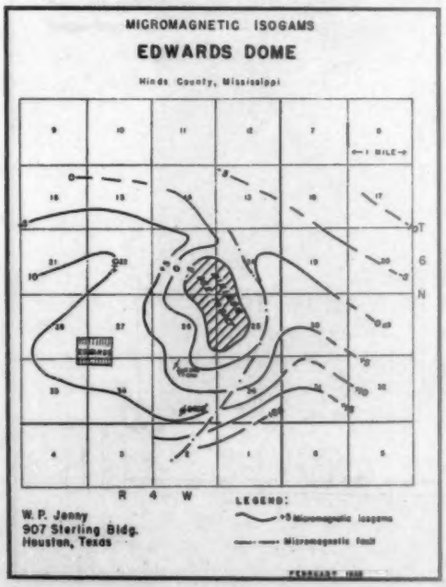
The top of the structure coincides exactly with the magnetically predicted apex, as shown by its projection to the micromagnetic profile *A-B-C* below. The edges of the structure coincide well with the magnetically predicted boundaries and differ only slightly in the southwestern part of the field. Even a small reversal, as shown in the eastern portion of the profile, is indicated by the dry hole in Section 4. The 100-foot fault crossing the structure could not be discovered by such a preliminary survey. The fault to the north is a micromagnetic fault indication and should be interpreted as indicating the edge of the structure.

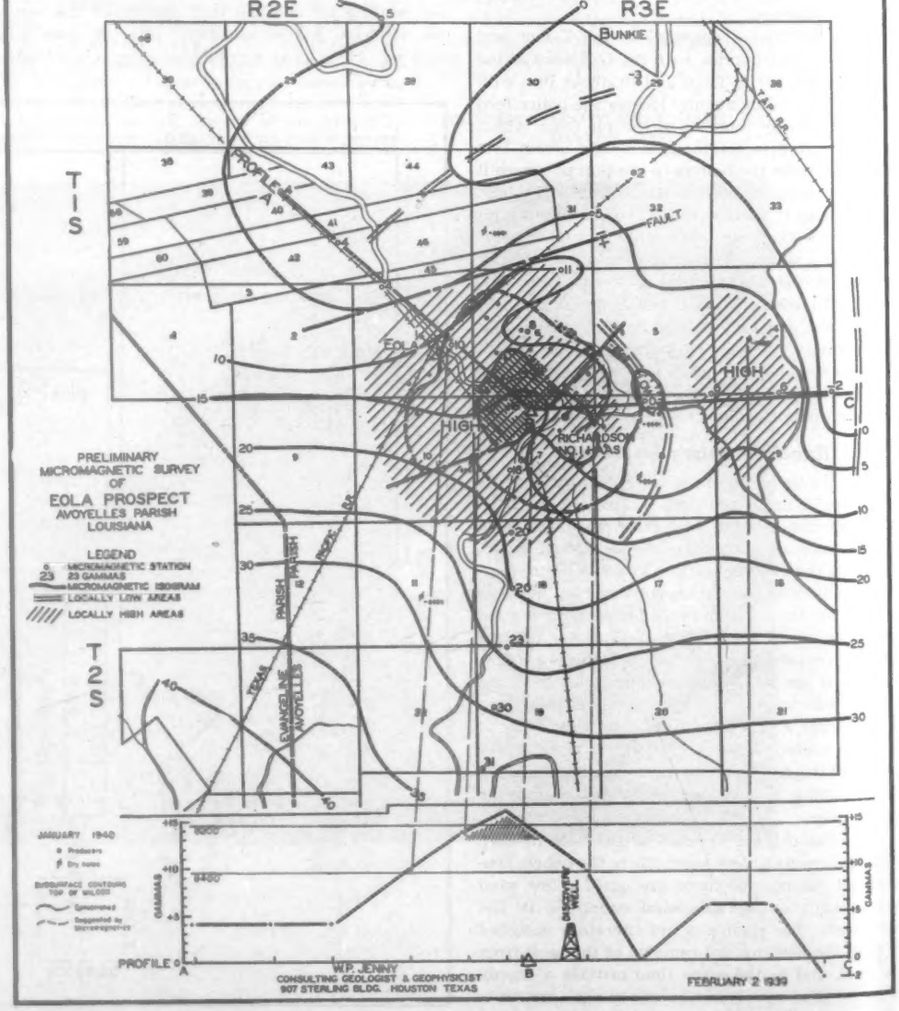
The experience at Eola and other Sparta-Wilcox structures seems to indicate that the structural uplift, while well expressed in the Wilcox, does only slightly affect the Cockfield and younger strata. The close agreement between the Wilcox structure and the micromagnetic prediction seems therefore to prove that the magnetic anomaly is the result of magnetic beds of Wilcox or lower Eocene age.

This agreement between micromagnetic prediction and drilled-up structure is closed to perfect and should greatly encourage micromagnetic surveying in the Sparta-Wilcox trend.

In Fig. 3 are shown in black the micromagnetic isogams, a micromagnetically predicted N-S fault, and the status of wells at the time of the micromagnetic survey in the fall of 1935. The torsion balance gradients were surveyed in 1937. In green is shown the later development of the area, which

Fig. 1—(Right) Eola structure, Avoyelles Parish, Louisiana. Fig. 2 (Below) Edwards Salt dome, Hinds County, Mississippi





represents now the most northwesterly portion of the Anahuac field.

The micromagnetic data indicate positive zones to the west and east and a negative zone along the apex of the structure. A sharp break in the micromagnetic profiles along the east edge of the revealed structure was interpreted as a fault. The micromagnetic data indicated that this fault would not cross the Anahuac-Stowell highway, which prediction was later on proved by the wells.

Micromagnetic Results

This picture is especially interesting as it shows that the micromagnetic results alone or combined with the gravimetric results give a fair idea of possible structure in a typically Gulf coastal area.

In the immediate area of Odem three weak but definitely local micromagnetic anomalies were observed in the course of a survey in the fall of 1937. In Fig. 5 are shown the micromagnetic data for the westernmost local anomaly, together with more recent well information. The isogams in this figure are slightly accentuated, but are well within the limits allowed by the readings at the respective stations.

The micromagnetic profile and isogams indicate a low relief north-southerly anticline with a sharp flexure or fault along its eastern flank.

The Seaboard discovery well is located ¼ mile west of the micromagnetic fault and just north of the highest micromagnetic station (52 gammas) along the west-easterly profile. The discovery was made in October 1939 and the well produced distillate from perforations at 6,995-7,000 ft., with a

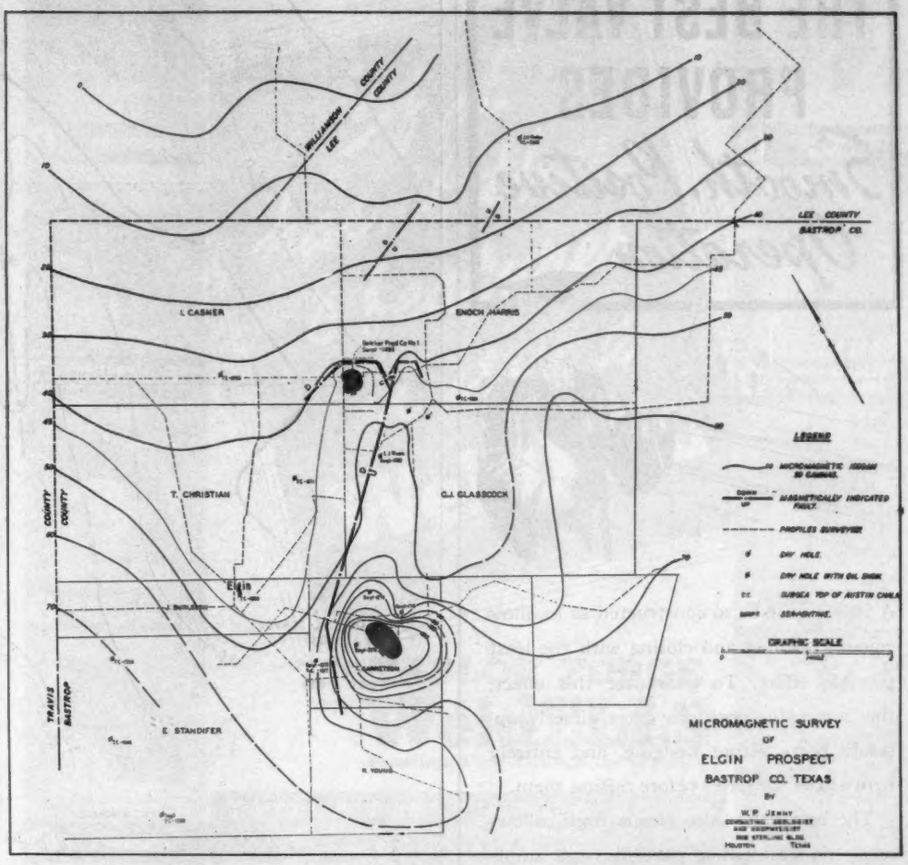


Fig. 3—(Below) Northwest extension of Anahuac structure, Chambers County, Texas

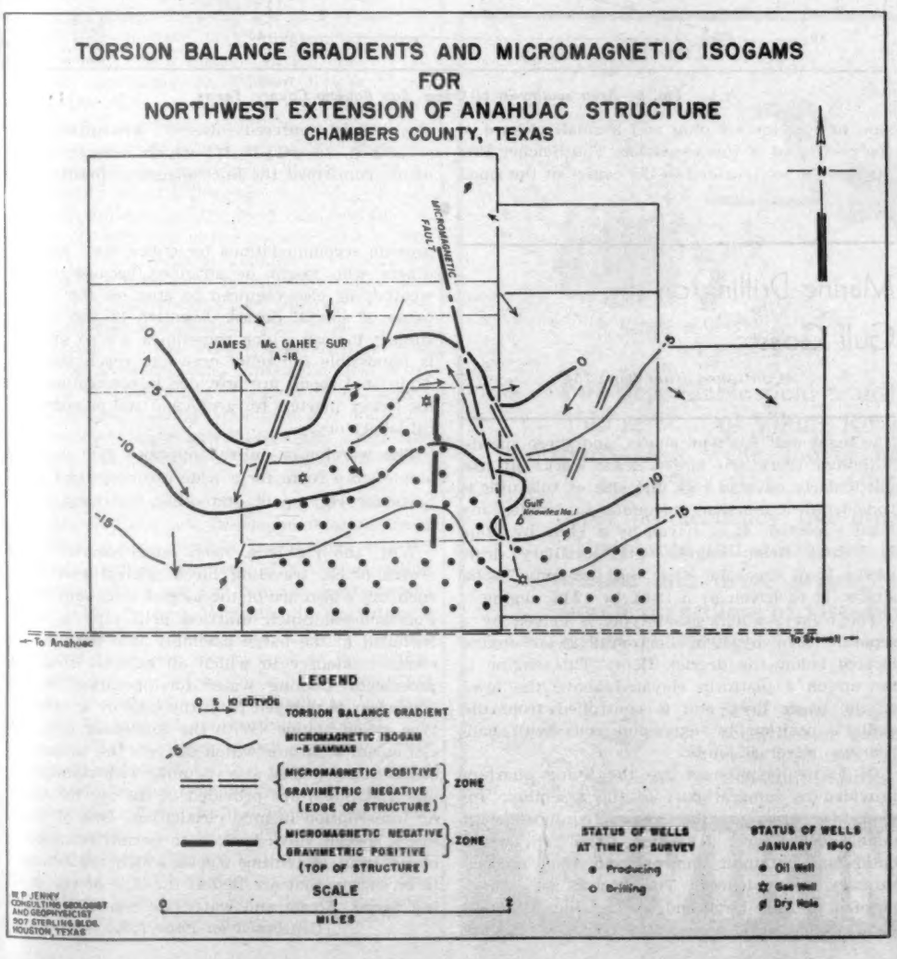


Fig. 4—(Above) Elgin serpentine plug, Bastrop County, Texas

number of salt-water sands above and below the producing horizon.

While the performance of the well seems to confirm the low structural relief, as suspected by micromagnetics, still the fact that production was discovered at this particular spot throws considerable light upon the value of micromagnetic surveys in Southwest Texas. This survey also shows in what detail and with what accuracy micromagnetic work must be conducted in this general district, in order to yield any practical results.

Edwards Dome Area

Fig. 2 shows the micromagnetic results in the area of the Edwards dome (midway between Vicksburg and Jackson, Miss.). The discovery well struck salt at 3,026 ft. and had been abandoned at the time of the survey, January 1938.

A very definite, closed magnetically negative area is indicated to the north and east of the discovery well. This negative area in all probability indicates the apex of the salt core. Fig. 2 represents a typical micromagnetic picture for a piercement-type salt dome.

More recently a well, located in the southern portion of Section 35, was carried to a depth of 8,458 ft. without encountering salt and thereby confirmed to a certain extent the micromagnetic picture.

In Fig. 4 is shown the micromagnetic picture and the well information on a serpentine plug east of the town of Elgin. The magnetic anomaly is exceptionally strong and should not be considered as representative for producing serpentine plugs in this general district. The size of the anomaly might somewhat explain why this plug is dry, because it indicates a solid plug of unaltered serpentine at relatively shallow depth.

Micromagnetics indicated a northward exten-

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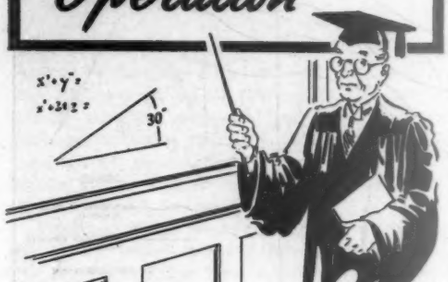

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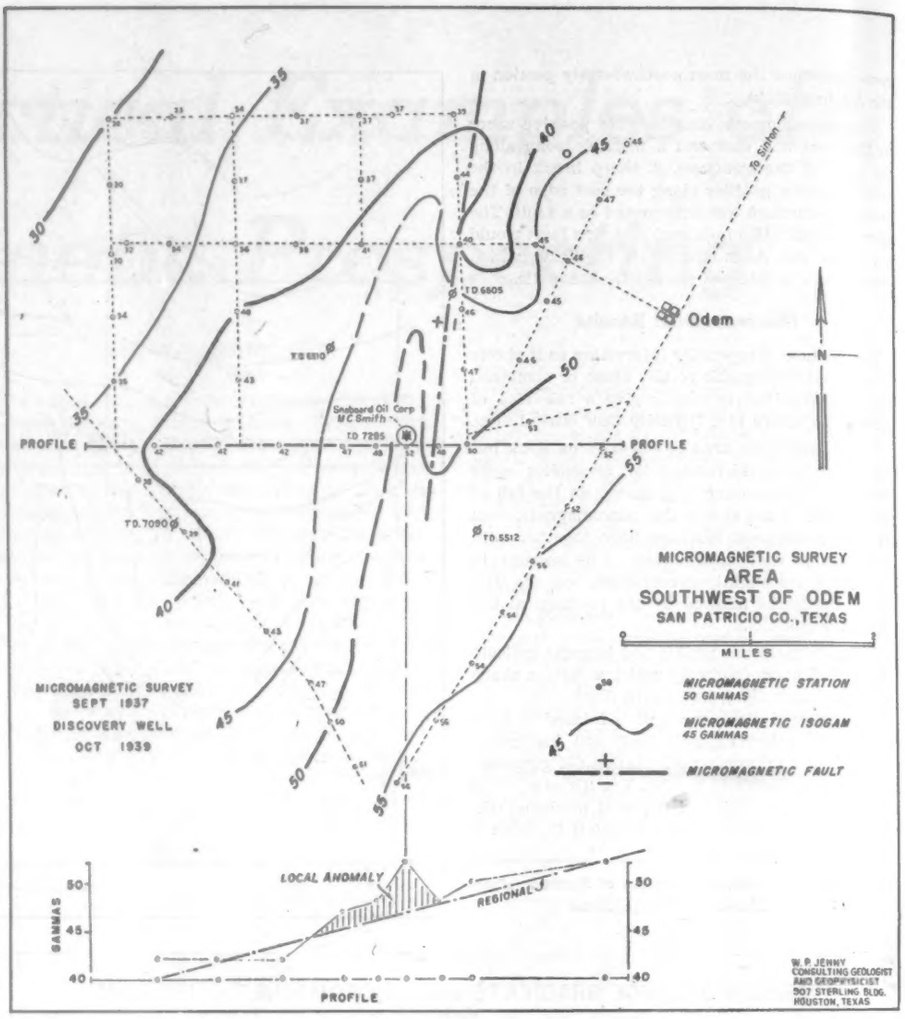


Fig. 5—Area southwest of Odem, San Patricio County, Texas

sion of this known plug and a small closure at the north end of this extension. The Belcher Production Co. well, drilled in the center of the small closure, encountered altered serpentine from —1,465 ft. to —1,645 ft., which, though barren of oil, confirmed the micromagnetic prediction.

Marine Drilling on the Gulf Coast

(Continued from Page 75)

The main unit has 9-in. shafts, and three speeds. Although there are larger draw works in use, particularly on land rigs, the size of this unit is considered more than adequate to handle any loads expected. It is driven by a 14-in. by 14-in. horizontal steam engine. The auxiliary draw works is of the same type but has only 7½-in. shafts. It is driven by a 12-in. by 12-in. engine.

The rotary, a high-speed type, is driven by a separate 12-in. by 12-in. horizontal steam engine located below the derrick floor. This engine is set up on a platform elevated above the level of the barge deck and is controlled from the driller's position by extension rods with ball-bearing universal joints.

Of particular interest are the living quarters provided as integral part of the assembly. Included are two sleeping rooms, equipped with double-decked cots, a kitchen, mess hall, and a bathroom containing showers and other modern sanitary conveniences. The rooms are soundproofed, and are large and comfortable. Although not expected to be used regularly, these quarters provide accommodations for entire crew and any others who might be stranded because of bad weather or else required to stay on the rig because of special duties. Location of the field is subject to fogs which sometimes are so dense it is impossible for relief crews to reach the rigs. Additional rooms are provided in connection with the living quarters for geological and paleontological laboratory.

The warehouse on the opposite side contains ample store room for a wide assortment of small parts for rig repair, and other tools and equipment.

With the rig is a 136-ft. steel derrick. The crown block, traveling block, swivel and other such units also are of the largest sizes and types. Four-and-a-half-inch unitized drill pipe is used. Included in the barge assembly is a marine-type steam condenser to which all exhaust steam is processed. Cooling water for operation of the condenser is pumped from the lake by a vertical-type steam engine. With the condenser is a special steam separator which delivers the condensed steam to boiler feed at a vacuum. Two standpipes, one a standby, are provided in the rig to insure no interruption in mud circulation. One of these has a special valve hookup to permit connection direct from cementing trucks which are brought in on barges that are tied at the side of the drilling barge. Steam and water-line connections are

(Continued on Page 139)

made at the same point so that it is unnecessary for any of the cementing crew to go on to the drilling barge during cementing operations.

Another feature of the rig is the oiling system. On each side below the derrick floor and under the draw works are two 5 to 6-bbl. capacity storage tanks, one for engine oil and the other for steam cylinder oil. From these tanks oil is piped to convenient places around the rig to where it can be pumped.

The boiler barge, also of the submersible type as commonly used on the Gulf Coast, is 100 ft. long and 36 ft. wide with the hull 10 ft. in height. It carries five 300-lb. working-pressure oil-field-type boilers, generating superheated steam, three on one end of the barge and two on the other. They are supported on a deck elevated 8 ft. above the deck of the barge. As in other such barges fuel and water tanks are located on the barge below the boilers. There are three 10-in. by 5-in. by 10-in. boiler-feed pumps which with the control manifold are installed in the center of the barge between the two rows of boilers and enclosed by a corrugated-iron housing. Equipment on the barge also includes a boiler-feed water heater.

Each of the feed pumps has three suction and three discharge connections. Suction connections are from the hot-well tank and the fresh water supply below the boiler floor, and from the boiler-feed water heater. Discharge connections are to the boiler-feed water prehcater, the rig floor and boilers. Lines for these connections are located below the floor with valve controls conveniently lined up on the floor in front of the pumps.

Boilers Equipped With Blowers

Boilers have short stacks but are equipped with steam-turbine-driven blowers to supply forced draft. Burners are convertible from gas to oil for fuel although gas is now being used.

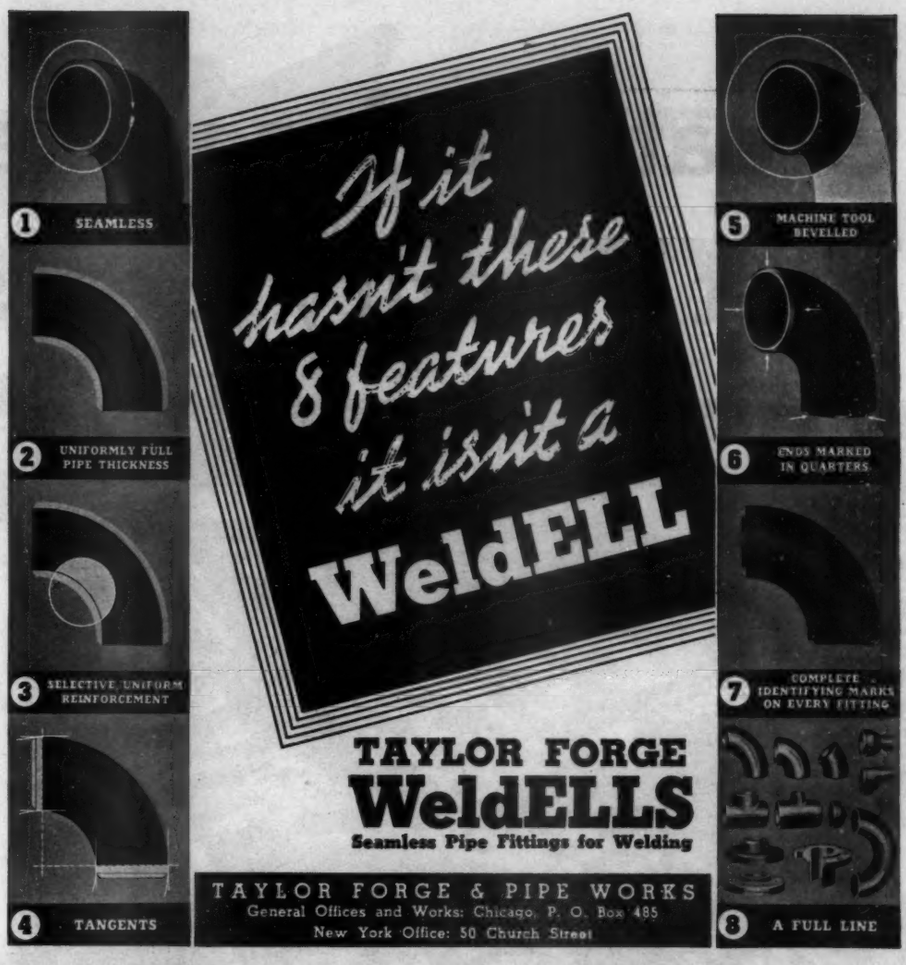
There are five fuel-oil tanks, one for each boiler and located three on one end of the barge and two on the other. These have a total capacity of 730 bbl. Fresh-water tank, divided into three compartments, has a capacity of 925 bbl.

Present operations are in about 7 ft. of water, leaving the decks of the barge hulls well above the normal water level of the lake. However, the barges are of such height and weight they can operate readily in water up to depths of 15 ft. and possibly slightly deeper.

For development of the field Superior Oil Co. has established a base at the town of Lake Arthur, about 11 miles south of Jennings. From there the field is a little over 20 miles by water. The base used by Loffland Brothers, drilling for Amerada Petroleum Corp., is at a point on the lake shore about 15 miles west of Lake Arthur from where the necessary boat trip to the field is reduced to about 8 miles. In addition to luggers and barges for hauling equipment and materials, both operators have speed boats and other fast crafts for transportation of crews and other field men.

By use of the marine rigs, well time is being materially reduced and development of the field facilitated, not to mention the savings effected by elimination of the need of extensive piling foundations. Wells are now being drilled to depths around 9,000 ft. and completed in less than 3 weeks, including moving time. Unusual drilling conditions have been experienced so far in that the formations are exceptionally soft, permitting hole to be made almost as rapidly as the drill stem can be lowered and cuttings removed.

Gas for fuel purposes is being supplied from a gas well completed for that purpose. A central water well also has been drilled. Gas and water lines are laid across the bed of the lake to the various locations as needed. Oil flow lines from the various wells also are laid across the bed of the lake to central storage points set up on piling foundations, and from where the oil is loaded into barges for movement from the field.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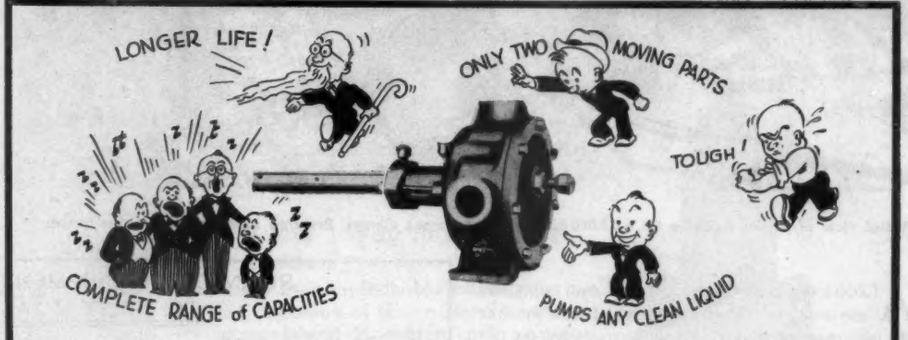

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Great Strides in Refining in Past Twenty Years

By W. T. ZIEGENHAIN

Segregated into four groups at important shipping points along the Gulf Coast of Texas and Louisiana and separated by less than 500 miles are oil refineries which account for 30 per cent of the total capacity of the nation. This area represents the highest concentration of plant operations in the world. Tankers take more than 1,000,000 bbl. of products from these plants daily, the great bulk going to the East Coast

Aerial view of Taylor Refining Co.'s 20,000-bbl. plant at Corpus Christi. Pressure tankage under construction

Gulf Coast plants ship about 1,000,000 bbl. refined products daily to East Coast. Here shipments are segregated according to the four customs offices and reflect the latest representative data, although quantities are substantially above the average for 1939. In addition, these plants export 170,000 bbl. of refined products daily. Shown also is the proposed 10,000-bbl. 450-mile gasoline pipe line to take water shipments of refined oils inland. Another line is in prospect which will extend from Baton Rouge, La., to Virginia markets

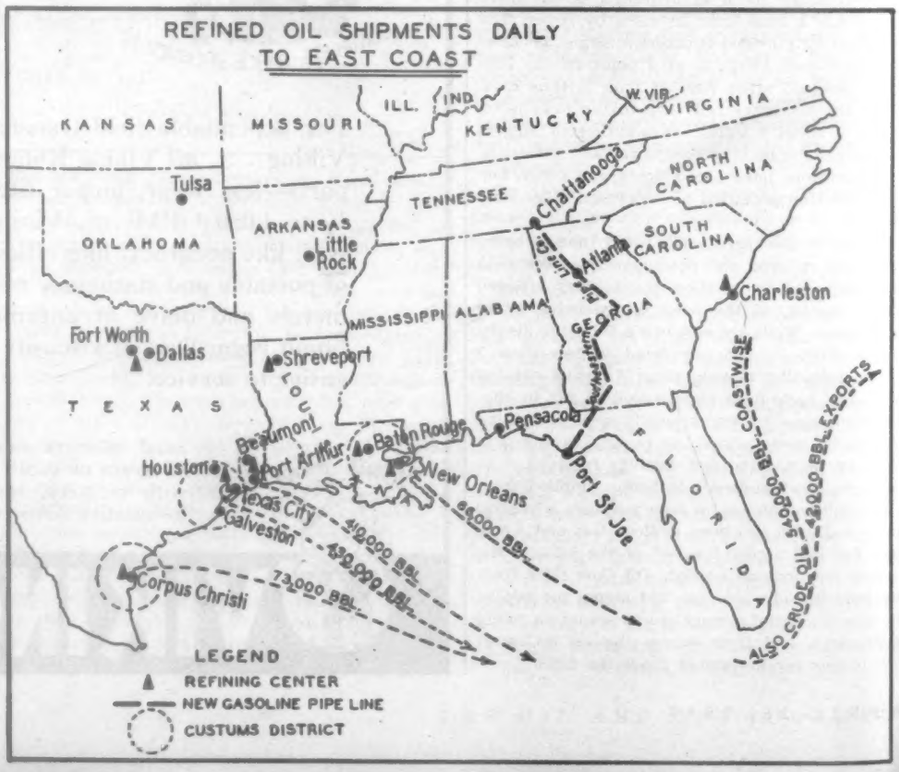
ALONG the Gulf Coast of Texas and Louisiana are located 45 oil refineries which now process 30 per cent of the crude oil processed in the United States. Four distinct refining areas exist within this coastal territory. They are generally referred to as the New Orleans, Sabine, Galveston, and Corpus Christi groups. They take such designations because of the location of U. S. Customs district offices in these cities and through which the tanker shipments of refineries located in the respective group are cleared.

The adoption of names of ports of clearance to identify these areas can be understood when it is realized that 90 per cent of the refined products made at these plants move to market by water.

Tanker Distribution

The great bulk of the products are distributed by tanker along the Atlantic Coast from Florida to Maine, but substantial quantities also move by water, up the Mississippi, to points well within the interior of the southeastern states.

At the present time a 450-mile pipe line is being laid from Port St. Joe, Fla., north to the Georgia state line near Chattanooga, Tenn. It will distribute gasoline, kerosene, and other clean, light oils to the interior of the southeastern quarter of the United States. This gasoline pipe line will operate as the Southeastern Pipe Line Co.,



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a joint undertaking of the Pure Oil Co. and the Gulf Refining Co., each of which operates a large refinery in the Gulf Coast territory. The new pipe line will serve their southeastern markets by bringing products from their plants by tanker to the coastal terminal of the pipe line and these products will then be pumped northward as needed. This pipe line when completed will handle up to 10,000 bbl. of oil daily and its carrying capacity can be stepped up in time by adding pumping stations if the demands require.

Advantages of Gulf Coast

Considering the manner in which all products move from the refineries along the Gulf Coast it is not difficult to understand why these four groups came into existence at favorable water-shipping points.

However, other factors favor the growth of oil refining along the Gulf Coast. Most important of these is the availability of Mid-Continent and Gulf Coast crude oils.

Crude-oil pipe lines connect these refineries with every major oil-producing field in the Mid-Continent including those in Southwest Texas, the Panhandle, North Texas, East Texas, Oklahoma, Arkansas and North Louisiana as well as bringing in oil from the 600 scattered pools along the Gulf Coast.

Probably the second greatest asset of the Texas and Louisiana Gulf Coast as an oil-refining center is its moderate climate. This permits shipment by waetr in all seasons of the year. It favors the building of refinery units out in the open and this generally tends to decrease the plant investment and operating expenses. Safety is also promoted. In a moderate climate labor is usually available at lower rates because the expenses of living are less.

Growth of Refining on Gulf Coast

Along with these basic advantages, the plants along the Gulf Coast find ample fresh water for cooling, fuel is relatively cheap, a favorable management-employe relationship has been developed and the greater number of plants are relatively new and they have been unusually well maintained.

It might be interesting to note the relative growth of the Gulf Coast refining group as compared with that of oil refining in the United States generally.

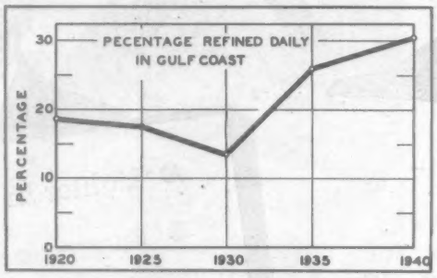
Accompanying this article is a graph which depicts this over a period of 20 years but the comparison can also be seen from the fact that whereas the Gulf Coast accounts for 30 per cent of the oil refined today, it processed only 18 per cent in 1920.

Thus, within a period of 20 years the Gulf Coast refining area has not only grown in proportion to the industry generally, but has greatly strengthened its relative position. Stated in terms of crude oil refined daily, the latest Bureau of Mines data indicate that refineries in the United States are processing 3,420,000 bbl. of crude daily. Of this, Gulf Coast refiners are processing 1,058,000 bbl. or 30 per cent.

In the same period in 1920 the total runs of refineries in the United States was 1,208,000 bbl., of which 224,000 were processed through Gulf Coast refineries.

From these data it can be seen that refinery operations in the United States roughly trebbled in this 20-year period, while the operations of the Gulf Coast area became four times as great.

Along with the advantages of operating refineries along the Gulf Coast, there are of course certain disadvantages. Most important of the disadvantages placed in the way of Gulf Coast refiners is the relatively thin local market. This lack of high concentration of population along the Gulf Coast is in contrast with the relatively high concentration of population along the East Coast. This fact has tended to favor the building of very large refining units along the Gulf Coast which help to supply refined oils to the East Coast.

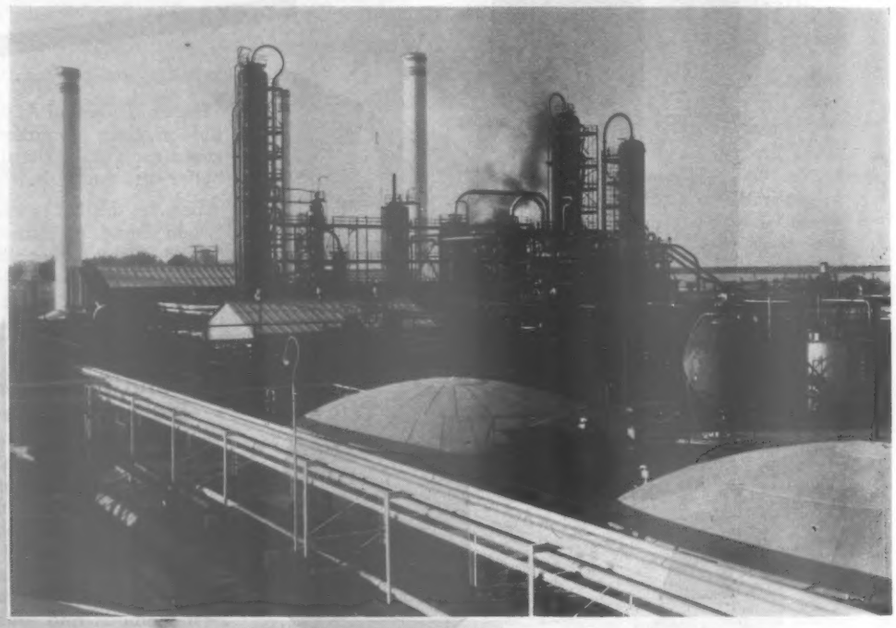


From 1920 to 1930 Gulf Coast refineries processed a declining percentage of crude oil refined in the United States. Since 1930 they have reversed that trend and now process 30 per cent of the total

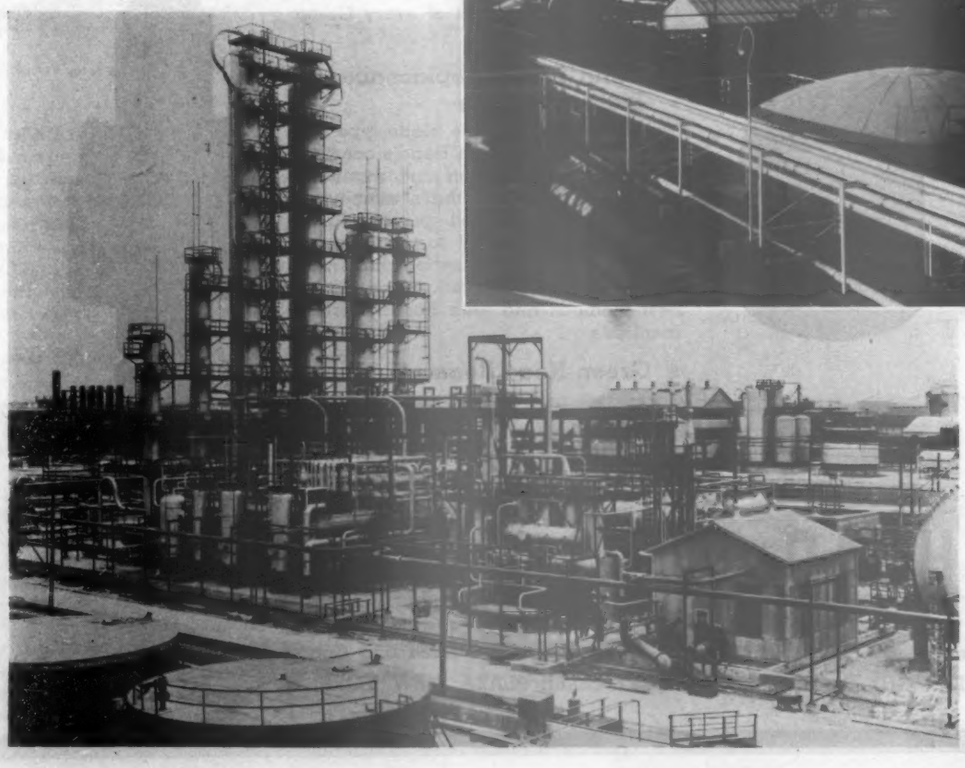
More Small Plants to Come

There is little advantage in freight or distribution costs in having a large number of small refineries scattered throughout the Gulf Coast area as is the case in the interior of the United States because of the population differences. Technologi-

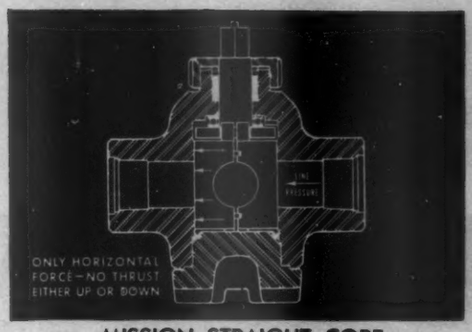
(Continued on Page 146)



Part of distillation equipment at Pure Oil Co.'s enlarged 59,000-bbl. plant at Smith's Bluff



Typifying industrial expansion in the Southwest is the new aviation gasoline polymerization unit at Gulf Oil Corp.'s refinery at Port Arthur, shown at left



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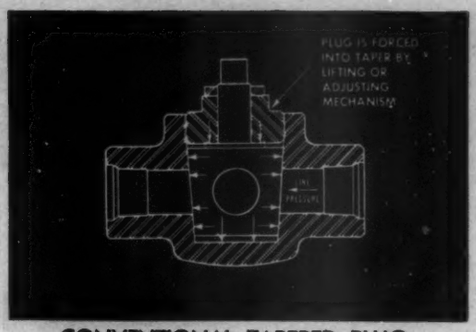
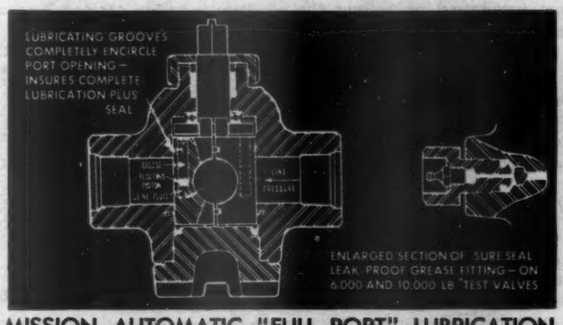


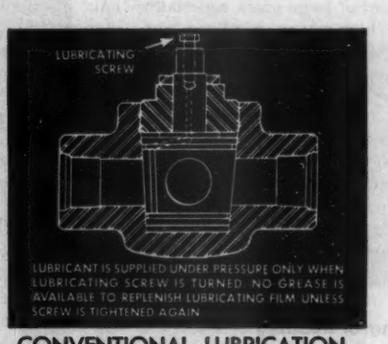
CONVENTIONAL TAPERED PLUG

A tapered plug also has vertical motion. It can seat perfectly only when wedged. Greater side wall clearance in operation makes a perfect seal difficult and allows opportunity for sand to accumulate under the seat. This increases friction and wear.


LUBRICATING GROOVES COMPLETELY ENCIRCLE PORT OPENING—INSURES COMPLETE LUBRICATION PLUS SEAL
ENLARGED SECTION OF SURE SEAL LEAK-PROOF GREASE FITTING—ON 6,000 AND 10,000 LB. TEST VALVES

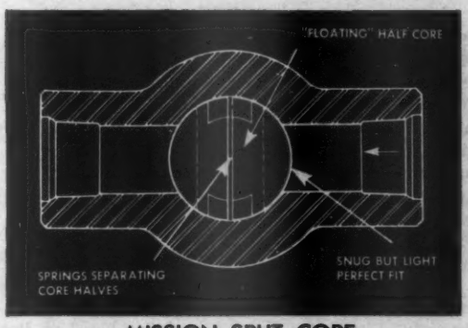
MISSION AUTOMATIC "FULL-PORT" LUBRICATION

Line pressure against piston in lubricating storage reservoir automatically forces and holds sufficient lubricant in place in the grease grooves to both lubricate and form a perfect seal at all times regardless of pressure.


LUBRICATING SCREW
LUBRICANT IS SUPPLIED UNDER PRESSURE ONLY WHEN LUBRICATING SCREW IS TURNED. NO GREASE IS AVAILABLE TO REPLENISH LUBRICATING FILM UNLESS SCREW IS TIGHTENED AGAIN

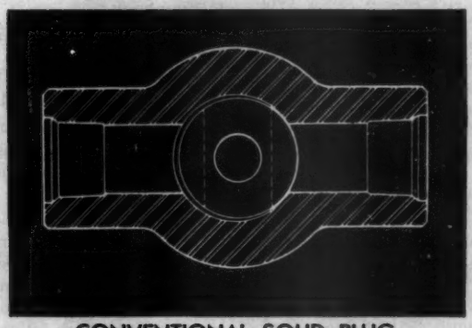
CONVENTIONAL LUBRICATION

Lack of constant pressure to replenish the lubricating film as rapidly as necessary can quickly cause serious damage and leakage.



MISSION SPLIT CORE

Perfect contact with body allows instant seal under pressure. This protects surfaces from sand and grit, reduces cutting and wear, and reduces maintenance costs.



CONVENTIONAL SOLID PLUG

Unless wedged, a solid plug cannot fit its seat perfectly. As the plug wears, it cannot fit. This permits accumulation of sand and grit, accelerating wear, and greatly increases difficulty of operation.

Mission Plug Valves are made with the same careful standards of metallurgical research, manufacturing precision and inspection that have made each Mission product a leader in its field. This valve again emphasizes our long-established policy, "If a product designed by Mission is not proven superior, Mission will not produce it."

Mission Plug Valves are manufactured in 2″, 3″ and 4″ sizes and in three grades—4,000, 6,000 and 10,000 lb. test pressures—and are available or can be ordered from leading oil well supply warehouses. Prices of each style and size compare favorably with those of the best plug valves formerly available. Full details are available on pages 1716 to 1724 of The Oil Weekly Composite Catalog of 1940.

Install Mission Plug Valves under your most difficult operating conditions. They will save you time, labor and money.

MISSION MANUFACTURING CO. · HOUSTON, TEXAS NEW YORK EXPORT OFFICE: 30 ROCKEFELLER PLAZA

Topping equipment in the new 10,000-bbl. plant at Corpus Christi of the Bareco Oil Co., with Dubbs cracking equipment shown at right

cal developments in oil refining have also tended to favor the development of large units, especially in the production of high-octane gasolines and narrow boiling-range burning oils which are demanded by modern engines and equipment.

Modifications of the program seem probable, however, as the Gulf Coast area becomes more densely populated. Slowly but surely the center of population is moving westward and southward and the Gulf Coast refining area will of course benefit in this movement. While the process is very slow its influence is already in evidence in the growth of the number of plants in the area rather than increases in the very large, older refineries.

Beginning of Refining

A review of the early history of the Gulf Coast refining area also helps to account for the manner in which relatively few but very large plants developed.

Oil was found in the Spindletop field of Texas in 1901. It contained a relatively small quantity of straightrun gasoline and had a black color. Refinery operators from Pennsylvania, Ohio, New Jersey, New York, Oklahoma, Illinois, and Kansas were of the opinion that the crude would be difficult to process. Increasing quantities of the oil were offered and no one seemed to want it.

A few small topping plants were built in the field. However, eastern capital was needed to establish refining on a big scale. Refining on a large scale did start the following year when the Magnolia Petroleum Co. completed a large plant in Beaumont, and the Gulf undertook a major expansion program for the Port Arthur plant which it had acquired in 1901.

From this beginning the Gulf Coast refining industry developed rapidly. It is interesting to note that the two plants mentioned above not only pioneered in the Gulf Coast refining development but are now recognized as among the largest in the United States. The plants referred to are those of the Gulf Oil Corp. at Port Arthur with a daily crude capacity of 125,000 bbl., and the Magnolia Petroleum Co. plant at Beaumont of 100,000-bbl. capacity. At about this same time the Texas Co. was building its plant at Port Arthur and it now has a capacity of 135,000 bbl.

Capacity of Present Plants

At present the combined capacities of Gulf Coast refineries is 1,204,650 bbl. per day. The most rapid rate of plant expansion in the area was within the past 5 years and more particularly in 1937. Some idea of this growth of refining may be derived from an accompanying table. Here are listed all of the major refineries in the Gulf Coast area as they operated for the past 10 years, and it is interesting to note that in the period the trend in refining ran countercurrent to that in the United States, namely, to operate fewer but larger plants.

An analysis of the list reveals but 18 refineries on March 1, 1930. On the same date 5 years later the comparable number is shown as 28 and on March 1 of 1940 the list is advanced to 40 plants.

It is also noticeable that while the older plants have increased their capacities they have not done so as fast as the area has been able to handle new business.

Some might draw the conclusions from these data that complete plants of 100,000 to 150,000-bbl. capacity daily are economic maximums and that as the market for more Gulf Coast refined oil develops, additional 10,000 to 50,000-bbl. plants may be expected to locate there.

GULF COAST REFINERY CRUDE RUNS COMPARED WITH TOTAL UNITED STATES

(Data in barrels per day, Bureau of Mines, January each year)

	Gulf Coast	United States
1940	1,058,000	3,420,000
1939	1,023,000	3,220,000
1938	952,000	3,150,000
1937	849,000	3,038,000
1936	742,000	2,767,000
1935	642,000	2,435,000
1934	571,000	2,340,000
1933	486,000	2,134,000
1932	508,000	2,218,000
1931	516,000	2,258,000
1930	353,000	2,582,000
1925	326,000	1,849,000
1920	224,000	1,208,000

SHIPMENTS FROM GULF COAST REFINING CENTERS TO EAST COAST DURING DECEMBER 1939

(Data, latest available, based on Bureau of Commerce reports)

(Data in tons. To convert to barrels multiply gasoline figure by 7.7 and fuel oil by 6.0)

Port—	Gasoline	Fuel oil
Corpus Christi, Tex., to:		
Wilmington, Del.	.....	5,596
New York, N. Y.	11,508	33,045
Total	11,508	38,641
Texas City, Tex., to:		
Port Everglades, Fla., and Savannah, Ga.	6,658	.....
Jacksonville, Fla.	9,610	11,232
Savannah, Ga.	.....	8,869
Savannah, Ga., and Norfolk, Va.	15,860	.....
Wilmington, N. C.	4,646	.....
Wilmington, N. C., and Norfolk, Va.	15,998	.....
Baltimore, Md.	7,501	31,478
Wilmington, Del	11,732	18,789
Philadelphia, Pa.	29,931	12,065
New York, N. Y.	37,499	28,156
New Haven, Conn.	.....	10,159
Providence, R. I.	7,281	14,232
Providence, R. I., and Fall River, Mass.	.....	14,698
Boston, Mass.	18,633	40,051
Portland, Me.	.....	26,212
Portland and Bucksport, Me.	.....	12,717
Total	165,349	228,658

(Continued on Page 148)

TREND IN CRUDE CAPACITIES OF TEXAS AND LOUISIANA GULF COAST REFINERIES IN THE PAST 10 YEARS

(Bbl. daily as of March 1 each year)

Company—	1940	1935	1930
Texas			
American Petroleum Co., Norsworthy	10,000	4,000	.....
Amsco Refining Co., Corpus Christi	12,000	2,500	.....
Atlantic Refining Co., Atreco	22,600	.....	.....
Bareco Oil Co., Corpus Christi	10,000	.....	.....
Coastal Refineries, Inc., Port Isabel	6,000	.....	.....
Crown Central Petroleum Corp., Pasadena	16,000	8,000	5,000
Deepwater Oil Refineries, Inc., Houston	.....	3,000	3,000
Eastern States Petroleum Co., Houston	18,000	.....	.....
Gulf Oil Corp., Port Arthur	125,000	125,000	125,000
Houston Oil Co. of Texas, Viola	500	1,000	.....
Houston Terminal Refining Co., Houston	.....	.....	3,000
Humble Oil & Refining Co., Baytown	140,000	125,000	125,000
Humble Oil & Refining Co., Ingleside	25,000	15,000	15,000
Phoenix Refining Co., Houston	750	1,000	.....
Magnolia Petroleum Co., Beaumont	100,000	80,000	55,000
Maritime Oil Co., Houston	5,000	3,000	.....
Misko Refineries, Inc., Mirando City	.....	.....	15,000
Pan American Refining Corp., Texas City	79,000	25,000	.....
Pettus Oil & Refining Co., Pettus	1,000	1,600	.....
Pontiac Refining Co., Corpus Christi	7,000	.....	.....
Pure Oil Co., Smiths Bluff	59,000	38,000	32,000
Rado Refining Co., McAllan	1,000	500	.....
Refugio Refinery, Inc., Refugio	15,000	.....	.....
Refugio Refinery, Inc., La Blanca	12,000	.....	.....
Republic Oil Refining Co., Texas City	20,000	12,000	.....
Shell Petroleum Co., Houston	74,000	42,000	20,000
Shelly Refining Co., Bay City	11,000	.....	.....
Sinclair Refining Co., Pasadena	60,000	44,000	23,000
Southport Petroleum Co., Texas City	20,000	.....	.....
Southwestern Oil & Refining Co., Corpus Christi	12,000	.....	.....
Stone Oil Co., Texas City	7,500	7,500	.....
Taylor Refining Corp., Corpus Christi	20,000	.....	.....
Terminal Refining Corp., Corpus Christi	12,000	.....	.....
Texas Co., Port Arthur	135,000	75,000	60,000
Valley Refining Co., Harlingen	1,000	1,000	.....
Texas Co., Port Neches	36,000	20,000	20,000
Texas Co., Houston	25,000	20,000	20,000
Phoenix Refining Co., Bruni	1,000	600	.....
Louisiana			
Chalmette Petroleum Corp., Chalmette	85,000	75,000	4,000
Continental Petroleum Corp., Lake Charles	building	.....	.....
Pan American Petroleum Corp., Destrehan	10,000	16,000	.....
Mexican Petroleum Corp., Destrehan	.....	.....	32,000
Shell Petroleum Corp., Norco	21,000	21,000	15,000
Standard Oil Co. of Louisiana, Baton Rouge	100,000	100,000	100,000
Total Gulf Coast	1,204,650	790,600	672,000

Why HAVE FOURTEEN...WHEN FOUR WILL DO

D+B

SUCKER RODS

Are Simplified

To Give Greater Value

Confronted with 14 types of sucker rods offered on today's market, the prospective sucker rod buyer faces a perplexing problem in deciding the grade suited to his particular needs.

D + B has led the way in simplifying this confusion by specializing on four rods. These four rods, shown here, meet every well condition, as proved by extensive field tests. In addition, the user's stocking and inventory costs are greatly reduced.

This common-sense view of sucker rods not only simplifies your selection problem but assists materially in the manufacture of a better product in the D + B plant. The savings are passed on to you in longer life and more trouble free service.

THE CONTINENTAL SUPPLY COMPANY

General Offices: DALLAS, TEXAS

Foreign Sales Subsidiary

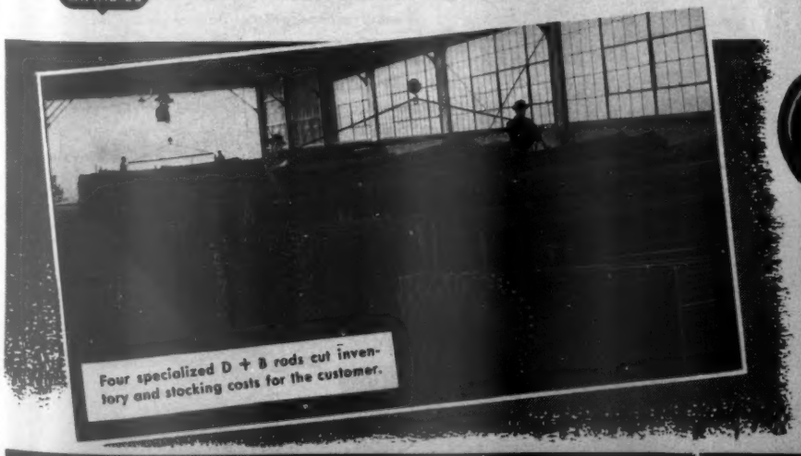
CONTINENTAL EMSCO COMPANY, Inc.

30 Rockefeller Plaza New York City, N. Y.

Representatives:

LONDON MARACAIBO BUENOS AIRES TRINIDAD

See Our Exhibit INTERNATIONAL PETROLEUM EXPOSITION TULSA MAY 18-25



Four specialized D + B rods cut inventory and stocking costs for the customer.

D + B RELIANCE for combating highly corrosive fluids and excessive pumping loads.

D + B TYPE 5 for corrosive wells where pumping loads are not excessive.

D + B HEATREAT for medium and heavy loads where corrosion is not severe.

D + B GRADE "A" for light and medium pumping loads where corrosion is not a problem.

CONTINENTAL

SERVING THE OIL AND GAS INDUSTRIES

Deep Drilling Develops New, Improves Old, Practices

DRILLING of wells to depths below 9,000 ft. continues to attract the attention of Gulf Coast operators but the ever-increasing number of wells reaching this depth and beyond has removed them from the novelty class and brought deep drilling to the point where efforts are being directed toward decreasing the cost, elimination of as many of the hazards as possible, and increasing the efficiency of the equipment and crews.

While oil companies continue to operate many of the larger rigs used to drill deep holes, there is a steadily growing number of drilling contractors entering this field. The ability of these contractors to accept the obligation to drill a well in excess of 11,000 ft. indicates that they are reasonably sure of their ability to quickly and safely reach that depth. This assurance is born of an understanding of the conditions to be encountered and the obstacles to overcome.

Most of the rigs used in deep drilling on the Gulf Coast are steam driven as there is ample water available at comparatively shallow depths and the fields, practically without exception, have plenty of gas for boiler fuel. In most of the fields a gas and water system is installed soon after the start of development and the drilling of any particular location requires only the laying of lateral lines to the rig.

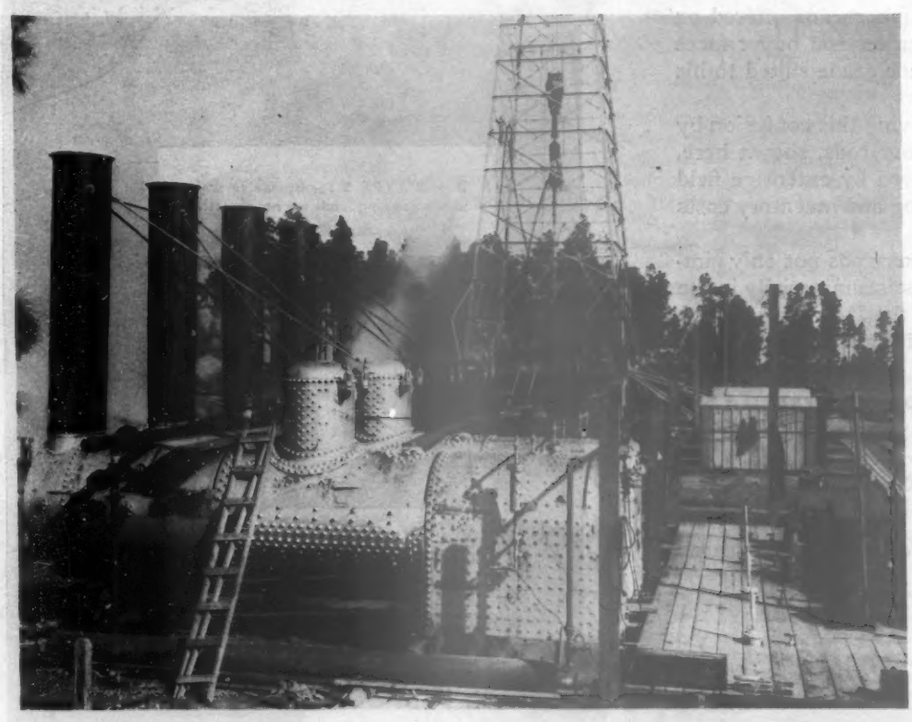
For wildcat drilling both steam and mechanical or diesel-electric rigs are used, depending to great extent on which is available and what the water and fuel conditions are in the particular area. Most of the rigs are equipped with three 125-hp. boilers although many rigs have four and sometimes a battery will include six boilers. Water softeners and preheaters are generally used. Working pressures of the boilers are from 250 to 350 lb. per sq. in.

While large rigs dominate in the deep-drilling campaign closer attention is being paid to the design of the complete drilling assembly than it is to any one unit. There are a comparatively large number of 14 by 14 steam engines in use but they are driving hoists having shafts of 9 and 10 in. in diameter. Smaller hoists, those having 7½ to 9-in. shafts (the sizes are nominal) can use successfully a 12¼ by 12¼ engine. Use of an engine too large for the hoist results in excessive chain breakage and kinking of shafts. In many cases auxiliary hoists capable of pulling the drill pipe from the hole are included as part of the equipment. The auxiliary hoist is driven by an independent engine. Many operators are using small engines, either located under the floor or direct connected, for driving the rotary table.

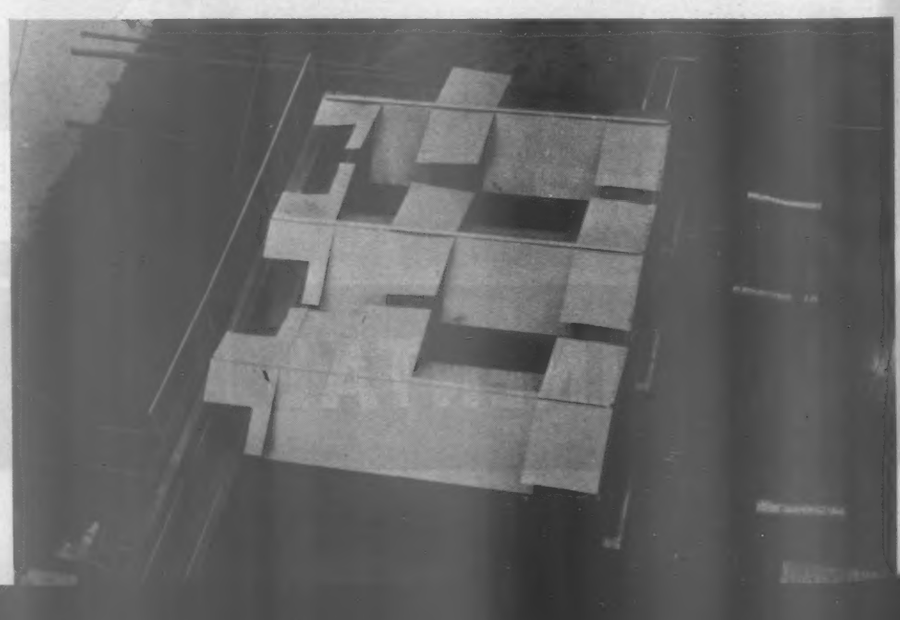
Most of the pumps used have a 20-in. stroke although some 18-in. pumps are used, particularly for standbys. While some of these pumps are using the maximum size liners (8½ in.) many of them are using as small as 6-in. liners. The increase in the size of the liners requires an increase in the steam capacity of the boilers and also the fluid capacity of the drill pipe. Use of 1¼-in. drilling lines is also restricted to the larger and newer rigs as it was found that the use of a larger line required a proper drum on which to spool it and an increase in the size of the traveling and crown-block sheaves if trouble was to be avoided; also the test strength of the derrick, the load capacity of the draw works and the engine and the tensile strength of the drill pipe might be exceeded by the larger line.

Only one size of drill pipe is being used, 4½-in. o.d. although the weight, type of upset, type of tool joint and drill collar assemblies vary with different operators and with different rigs. Some contractors use a few joints of 6⅝-in. drill pipe while drilling surface hole and also as an adjunct to the drill collars but many rigs are equipped with nothing beyond the 4½-in. drill pipe for

(Continued on Page 155)



Left: Four-boiler battery being used to drill in the Woodlawn field near Lake Charles, La. These boilers are equipped with low-water alarms which will tell the fireman whenever the danger point is near



Below: Covered steel tanks, each having a capacity of 125 bbl., are used in place of pits by one Gulf Coast operator in a 10,500-ft. field. Note that the pump suctions connect into the tanks at the right and the jet lines are at the left

LENGTHEN THE LIFE OF YOUR DRILLING STRING
WITH
REED SHRINK GRIP TOOL JOINTS
THE TOOL JOINT WITH THE
"SAFETY AREA" SHRUNK ONTO
THE DRILL PIPE FOR ADDED SAFETY
THE ADDED SUPPORT ...BRIDGES OVER THE DANGER POINT ...SEALS AGAINST LEAKAGE
REED ROLLER BIT COMPANY
P. O. BOX 2119, HOUSTON, TEXAS, U. S. A.

New Discoveries, Wildcat Tests and

TEXAS

(Number and Name of Well)

BRAZORIA COUNTY

(1) Glenn H. McCarthy's No. 1 Munson.
(2) Rowan & Nichols' No. 1 McIlvaine.

CHAMBERS COUNTY

(3) Standard Oil Co. of Texas' No. 61-54 State.
(4) Sun Oil Co.'s No. 1 Jackson.

COLORADO COUNTY

(36) Shell Oil Co., Inc.'s No. 1 Plow Realty Co.

FAYETTE COUNTY

(48) F. J. Hynes' No. 1 A. B. Kerr.

FORT BEND COUNTY

(5) Tide Water Associated Oil Co.'s No. 1 Armstrong.

GALVESTON COUNTY

(6) Continental Oil Co.'s No. 1 Stewart Title Guaranty Co.

GRIMES COUNTY

(7) Leigh J. Sessions' No. 1 Bary.

HARRIS COUNTY

(8) N. W. Hunter's No. 1 Daugherty.
(9) T. A. Carlton et al's No. 1 Bender.

JASPER COUNTY

(10) Midwest Oil Co.'s No. 1 Boykin.

JEFFERSON COUNTY

(11) Hebert & Smith et al's No. 1 Clubb.
(12) Merrimac Oil Co.'s No. 1 State.

LIBERTY COUNTY

(13) Gulf Oil Corp.'s No. 1 Kirby Lumber Co.
(14) Titanic Oil Co.'s No. 1 E. W. Boyt.

MATAGORDA COUNTY

(15) Barnsdall Oil Co.'s No. 1 Stoddard.
(16) Deep Rock Oil Co.'s No. 1 Petrucha.
(17) Stanolind Oil & Gas Co.'s No. 1 General American Life Insurance Co.
(18) Texas Co.'s No. 1 Taylor.

MONTGOMERY COUNTY

(19) Continental Oil Co.'s No. 1 Bender.
(20) David B. MacDaniel's No. 1 Baldwin.

SAN JACINTO COUNTY

(21) Shell Oil Co., Inc.'s No. 1 Santa Fe Tie & Timber Co.

TYLER COUNTY

(49) J. Z. Werby's No. 1 Hager.

WASHINGTON COUNTY

(22) John Deering's No. 1 Bohne.
(23) Mount Selman Oil Co.'s No. 1 Fuelberg.

WHARTON COUNTY

(24) H. C. Cockburn's No. 1 Leveridge.
(25) O. C. Garvey's No. 1 Menefee.
(26) Strake Petroleum Co.'s No. 1 Poole.
(50) Humble Oil & Refining Co.'s No. 1 Willis.

LOWER GULF COAST

ARANSAS COUNTY

(27) Continental Oil Co.'s No. 2 St. Charles.

CALHOUN COUNTY

(28) Coronado Corp.'s No. 1 Welder.

DE WITT COUNTY

(29) Atlantic Refining Co.'s No. 1 Conwell.

REFUGIO COUNTY

(30) H. J. Porter's No. 1 Morrow.

SAN PATRICIO COUNTY

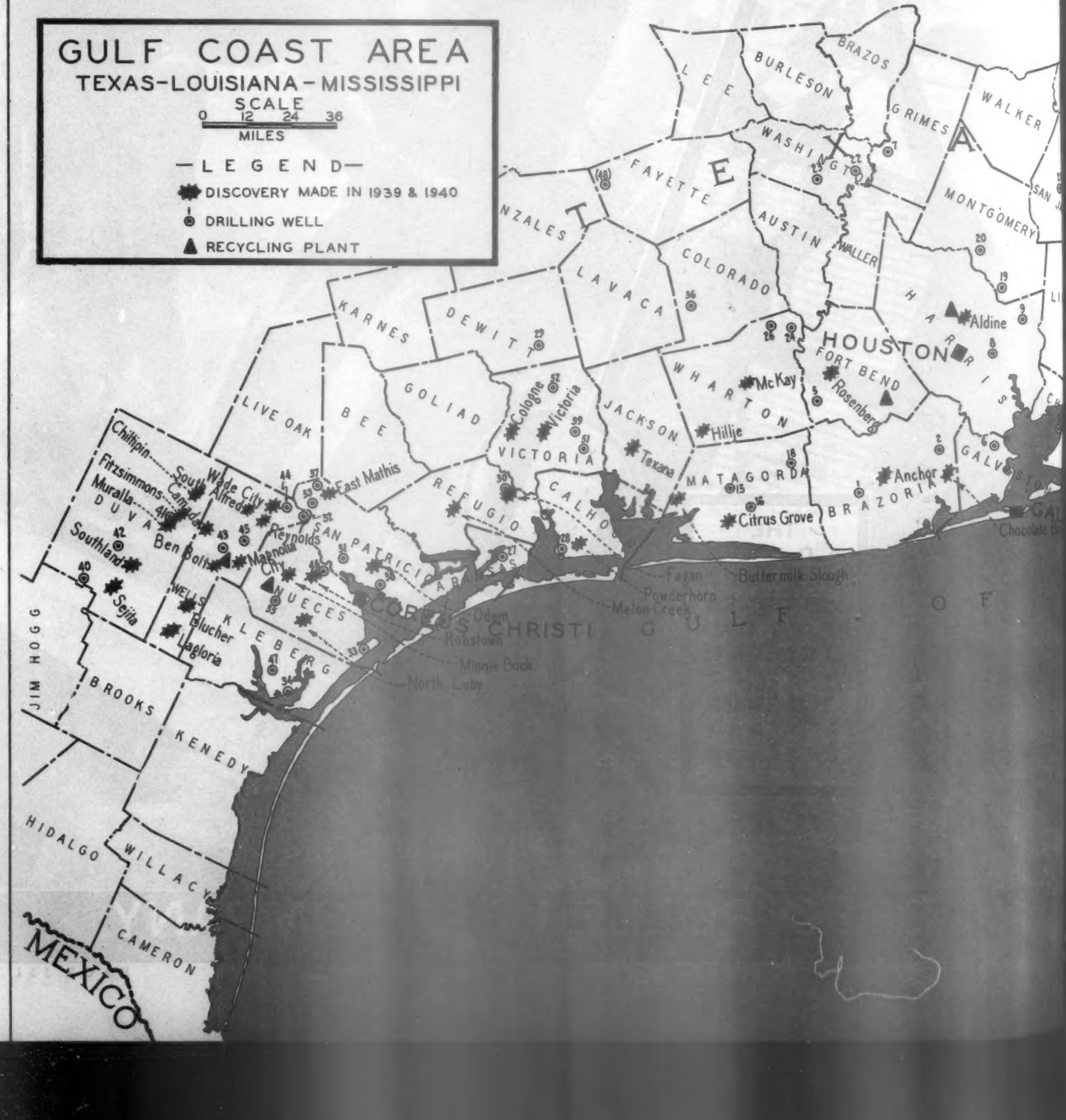
(37) Argo Oil Co.'s No. 1 East.
(53) L. L. Smith's No. 1 W. F. Timon.
(32) Texas Gulf Prod. Co.'s No 1 San Antonio Loan & Trust Co.
(38) Tide Water et al's No. 1 Ragsdale.
(31) Fred Wood et al's No. 1 Hart.

VICTORIA COUNTY

(51) Colton & Colton's No. 1 Buhler.
(52) Humble Oil & Refining Co.'s No. 1 Welder.
(39) John Mayo et al's No. 1 Hubalak.

JIM WELLS COUNTY

(43) Frank Gravis' No. 1 Forry.
(44) M. M. Miller's No. 1 fee.
(45) W. B. Osborne et al's No. 1 Almond.



Recycling Plants on the Gulf Coast

KLEBERG COUNTY
(47) Humble Oil & Refining Co.'s No. 1 Mork.
(34) Skelly Oil Co.'s No. 1 State.

NUECES COUNTY
(33) Humble Oil & Refining Co.'s No. 1 Duncan.
(46) Richardson Petroleum Co.'s No. 1 Studer.
(35) Wellington Oil Co.'s No. 1 Swenson.

DUVAL COUNTY
(40) C. Andrade's No. 1 Miller.
(41) Bridwell Oil Co.'s No. 1 E. A. Parr.
(42) Rutherford Drilling Co.'s No. 1 Driscoll.

LOUISIANA

(Number and Name of Well)

ACADIA PARISH
(1) Humble Oil & Refining Co.'s No. 1 Leger.
(2) Vincent & Welch's No. 1 Ruppert.

ASSUMPTION PARISH
(3) Falcon-Seaboard Oil Co.'s No. 1 Simoneaux.

BEAUREGARD PARISH
(4) Lofland Brothers' No. 3 Long Bell Lumber Co.

CAMERON PARISH
(5) Phillips Petroleum Co.'s No. 1 Miami Corp.
(6) Superior Oil Co.'s No. 2 State.

EAST BATON ROUGE PARISH
(7) Farris & Golding's No. 1 Paulet.

PLAQUEMINES PARISH
(8) California Co.'s No. 1 Delta Minerals Co.
(9) Gulf Refining Co.'s No. 1-E Buras Levee District.

ST. BERNARD PARISH
(10) Gulf Refining Co.'s No. 4 State.

ST. CHARLES PARISH
(11) R. H. Parker et al's No. 1 Thompson.

TERREBONNE PARISH
(12) Barnsdall Oil Co.'s No. 1 Nelson.
(13) Texas Co.'s No. 4 State-Conn Point.

VERMILION PARISH
(14) Louisiana Land & Exploration Co.'s No. 1 Walter.
(15) Texas Co.'s No. 1 Vermilion Parish School Board.
(21) G. H. Vaugh's No. 1 Boullion.

IBERVILLE PARISH
(23) Shell Oil Co., Inc.'s No. 1 Southwood.
(22) Humble Oil & Refining Co.'s No. 2-B Wilberts.

JEFFERSON DAVIS PARISH
(16) H. M. Naylor's No. 1 Acadia Development Co.
(17) Union Sulphur Co.'s No. 1 Samson.

LA FOURCHE PARISH
(18) Ernest Cockrell's No. 1 La Fourche Land Co.
(19) Humble Oil & Refining Co.'s No. 1 Sugar, Inc.
(24) Gulf Refining Co.'s No. 1-B Bowie Lumber Co.

LIVINGSTON PARISH
(20) Roderick & Tower, Inc.'s No. 1 James.

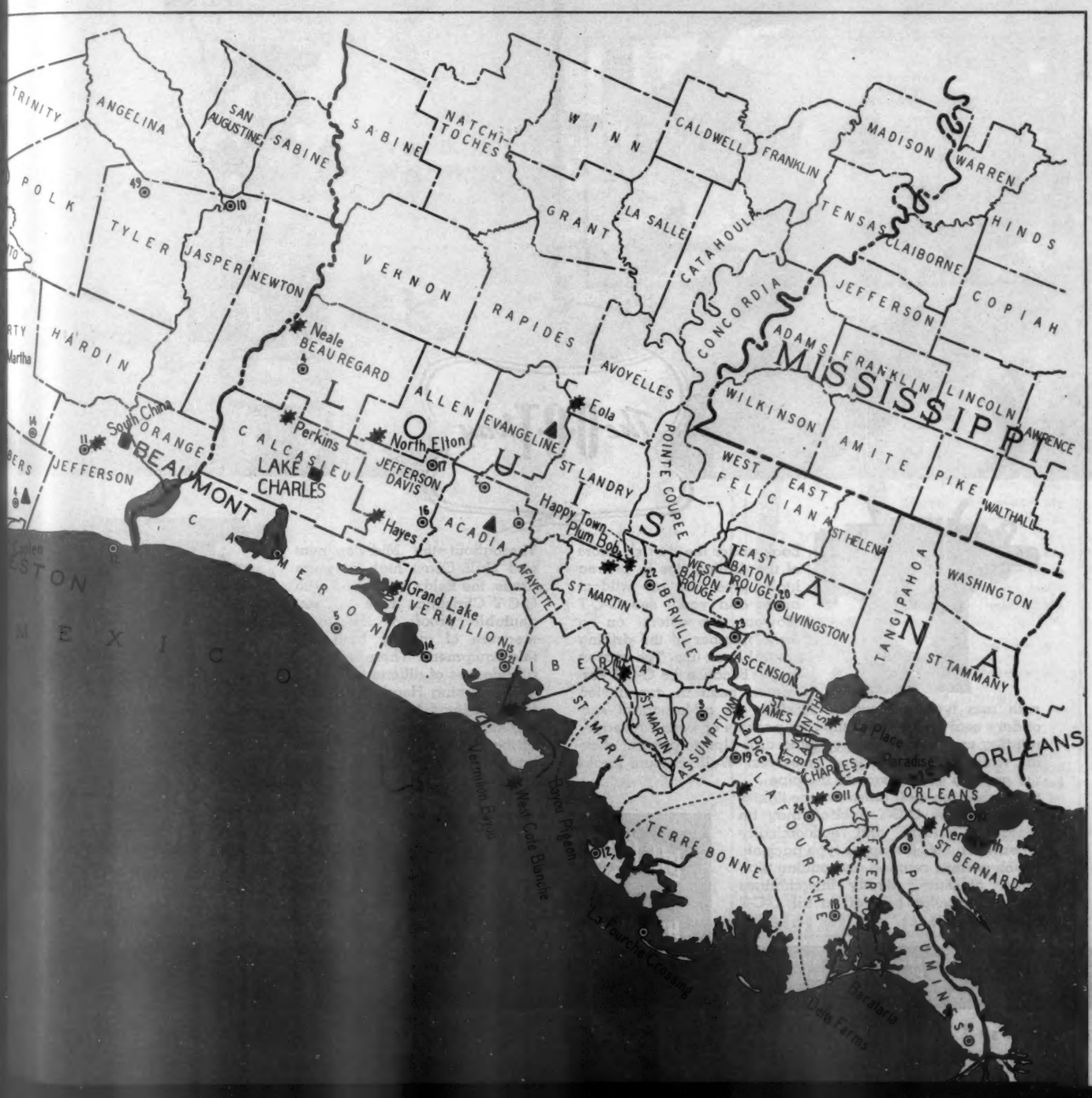
RECYCLING PLANTS

COMPANY AND LOCATION

Process Oil Co., Agua Dulce field, Nueces County.
Agua Dulce Corp., Agua Dulce field, Nueces County.
Coastal Recycling Co., Agua Dulce field, Nueces County.
Gulf Plains Corp., Agua Dulce field, Nueces County.
Corpus Christi Corp., Stratton field, Nueces County.
Note—Location of above plants indicated on map with two stars.
W. R. Davis, Inc., Alice field, Jim Wells County.
H. M. Harrell, Bammel field, Harris County.
Sun Oil Co., Seabreeze field, Chambers County.
Sun Oil Co., Willow Slough, Chambers County.

REPRESSURING PLANTS ALSO INDICATED BY STAR

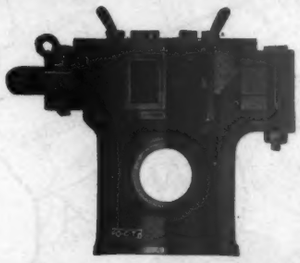
Humble Oil & Refining Co., Sugarland field, Fort Bend County.
Continental Oil Co., Tepetate field, Acadia Parish—Louisiana Map.
Continental Oil Co., Villa Platte field, Evangeline Parish—Louisiana Map.



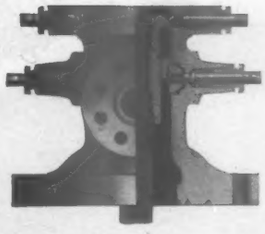
DRILL 'EM ...Safely!

COMPLETE 'EM ...Safely!

The O-C-T Way



Look under the derrick floors of the drilling rigs in proven high pressure or wildcat areas and you'll see O-C-T Blowout Preventers on a large number of the drilling control hook-ups. The reason why? Because the O-C-T Preventer, used in conjunction with ram type preventers, provides an all-important secondary seal and relieves the ram packers of wear caused by rotating and raising and lowering drill pipe to prevent sticking while subduing kicking pressures. Well pressure forces the pack-off to seal around the pipe . . . the higher the well pressure, the tighter the seal. The O-C-T pack-off may be replaced quickly and economically when worn out. A stripper type pack-off, which permits running and pulling pipe under pressure, readily interchanges with the regular pack-off in all O-C-T Preventers.



Throughout the Mid-Continent and Gulf Coast high pressure areas, the fields are dotted with O-C-T Christmas trees . . . undeniable proof of the extra measure of quality built into this equipment. There are literally dozens of different types of O-C-T Tubing Heads available for Christmas tree foundations. Type T-26, shown on the Christmas tree above and in cross-section herewith, is one of the most popular tubing heads built. Having retractable hanger seats, it permits running and landing tubing under pressure *through screwed type blowout preventers.* As shown in the accompanying cross-section drawing, the O. D. of the tubing hanger is slightly smaller than the I. D. of the casing above which it is used.

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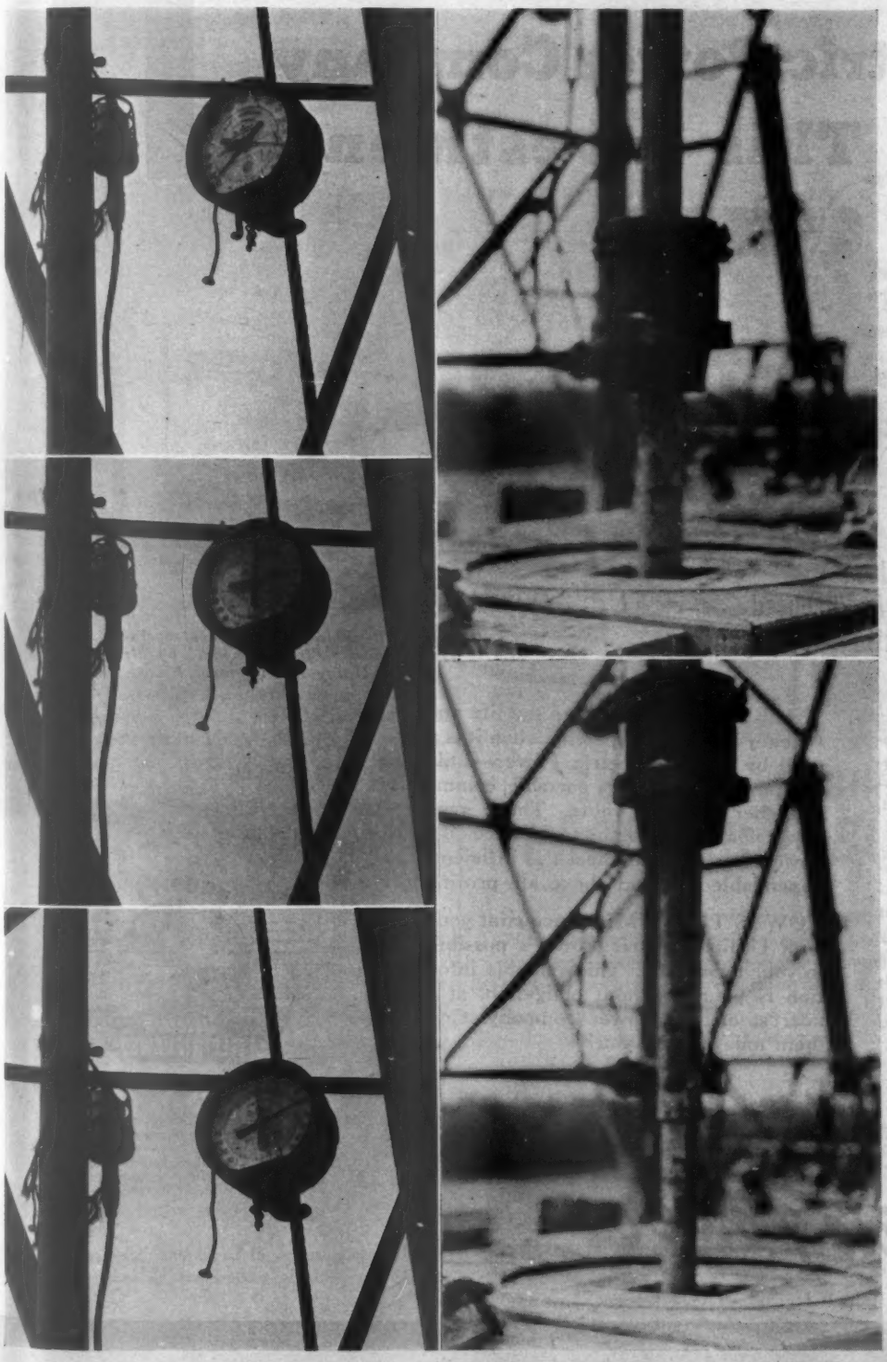
DEEP DRILLING PRACTICES

(Continued from Page 150)

drilling the 24-in. surface hole down to the 7¼-in. hole to the pay formation.

Depths below 10,000 ft. have been reached by rigs using 4½-in. pipe which weighed 13.75 lb. per ft. while some of the other operators having the heaviest rigs are using 4½-in. pipe weighing 18.10 lb. per ft.; the weight most commonly used is 16.60 lb. per ft. In the selection of the number and arrangement of drill collars there is a wide variation of preferences among Gulf Coast drilling contractors and oil companies. Drill collars used range from one 30 ft. 5½ in. regular collar weighing 2,000 lb. to four 30 ft. 7⅝ in. drill collars totaling in excess of 14,000 lb. These are standard collars, the full-hole type weighing a few hundred pounds less each.

While there is a wide variation in the derricks and derrick equipment, the practice is to have ample margin of safety in case the drill stem becomes stuck or other trouble develops. The actual weight of the drill stem in the hole will amount to about 200,000 lb., not considering the buoyant effect of the fluid. Most of the derricks are 136 ft. tall with 50-ft. base and are 800,000 or 1,000,000-lb. test structures. The derrick equipment (swivel, crown block, traveling-block elevators and hook) will have a load capacity of 250 to 350 tons. A typical crown block will have a safe working-load capacity of 720,000 lb., a suspended-load capacity of 600,000 lb., six 48-in. sheaves with the dead line and fast-line sheaves having a load capacity of 60,000 lb. each. The



Top, Left to Bottom: Some of the effects of pulling on pipe: (1) Weight indicator shows only the weight of the blocks. (2) As the driller pulls on the pipe the black hand goes to 120,000 lb. (3) Continued pulling brings the black hand around to nearly the 200,000-lb. mark. Right Upper: With all of the weight on the pipe the tool joint is nearly through the rotary table. Right Lower: Pulling on the pipe stretches it until the mark is over 3 ft. above the rotary table; this movement is due to stretch in the pipe

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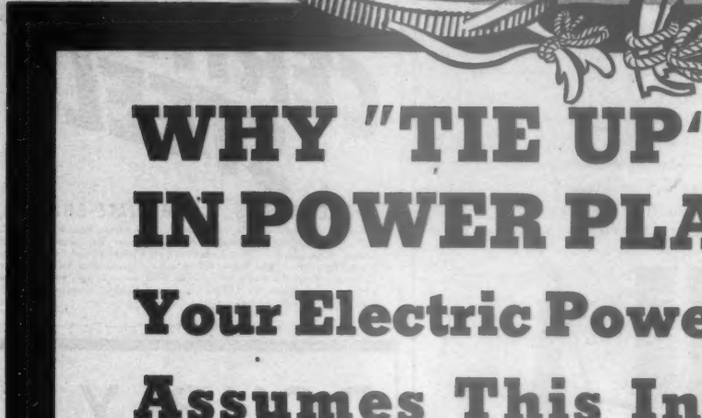

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traveling block will have approximately the same load ratings except it will have only five sheaves. This represents another case where care is taken not to overbuild in one equipment item, as a failure in any particular piece of equipment would be equally as detrimental to the success of the operation. Generally, an operator will use equipment throughout having approximately the same load capacity.

Nearly every rig is equipped with two standpipes and two hoses as any failure in the circulation system might possibly result in sticking of the pipe. Many operators are equipping their rigs with one jointed steel hose and one rubber hose, the former being used whenever extremely high pressures are to be encountered or oil is to be circulated and the latter being used for routine drilling, particularly on top of the hole where connections are made often. All of the valves and fittings on these lines are 10,000-lb. tests and the standpipes are equipped with heavy valves which can be closed in case the well starts to blow out. In addition, the kelly joint-to-swivel connection always includes a shutoff sub which is a plug-type stopcock.

Below-the-floor equipment includes a drilling head which will permit drilling under pressure, rams which can be closed around the drill pipe, valves on the flow line and casing and a mud-pump connection in one of the bradenhead wings. Many companies are using blank rams (rams with flat ends instead of recesses for fitting around the pipe for gate valves. Practically all of this equipment is automatically operated by water, mud or steam pressure, the control valves being located close to the driller's position. The location of this equipment under the floor requires a deep cellar and derrick having a high substructure. The practice of taking wire-line cores has saved operators millions of dollars although it also has required special equipment for running the retractable core barrel in the hole and for maintaining circulation while this is being done. The hoists for this are generally small and are driven by a small steam engine. A circulating-head attached to the extra hose permits circulation while the core barrel is being run or pulled from the hole. It also can be used for maintaining circulation while pulling the pipe through a sticky place.

The rigs are designed to give the maximum efficiency while drilling and making a trip and maximum safety from blowouts and drilling

Circulating head with gland in top maintains circulation while running and pulling wire-line core barrel

troubles at all times. The use of equipment having a high safety factor allows the drill stem to be handled quickly and round trips from a depth of 10,000 ft. are often made in about 5 hours. It is not uncommon for the crew to average a stand (90 ft. of drill pipe) per minute while going in the hole with a little more time required for pulling each stand while coming out of the hole.

While the equipment is large and heavy it is designed for portability and for ease in assembling. One of the features which had to be developed was a suitable gin pole for landing the crown blocks on the top of the derricks. When deep drilling first started on a large scale the size of the crown blocks was increased and considerable difficulty was encountered when attempts were made to land them with the gin poles which were standard at that time. Newer derricks have made allowance for this feature and it is as easy to land one of the 10,000-lb. crown blocks with the newer derricks as it was to land the old crowns weighing less than half that amount.

The use of two hoists serves another purpose in addition to providing a means of moving the drill pipe in case of failure of the main hoist. The anchoring of the deadline is a problem on the substructure derricks, but where the two hoists are used the deadline is spooled around the drum of the auxiliary hoist. Generally the strain on the hoist shaft and bearings is relieved by special clamps, much like cable-tool drilling clamps, which are attached to a reinforced joint of pipe under the floor. The great load placed on the drilling line causes it to wear at a point close to the drum and the life of the line is being greatly increased by pulling over a portion of the line at regular intervals.

Where no auxiliary hoist is used another method has been devised for more evenly distributing the wear on the line. This makes use of the old cable-tool practice of "swapping ends" with a line. The deadline is generally fastened with clamps similar to those used with the auxiliary hoists. Lines measuring 1,850 ft. are bought and when the end of the line on the drum reaches the point

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where it would have to be discarded, the approximately 400 ft. on the drum is cut off and the ends of the line changed, the fast line becoming the deadline and the deadline being attached to the drum.

Gulf Coast drillers have devised a method of doing this quickly, the only equipment necessary being a hook on the side of the derrick in which to hang the traveling block. The traveling block is swung over to the hook by means of the catline and as soon as the weight is off the line the deadline can be unclamped and the line pulled from the drum and cut off at the proper place. The crown block is turned half around or 180°, and the fast line and deadline clamped in place. This not only equalizes the wear on drilling line but it also equalizes the wear on the crown-block sheaves.

By proper care in installation and operation of the drilling line it is possible to drill with one line an 11,000-ft. well in a field. Wildcat drilling as it entails more trips and slower drilling, will generally require a second line although considerable life may be left in the latter when the well is completed. The old line is discarded and a new one installed just before the protection string of 9⅝-in. casing is run to about 7,000 ft. The new line completes the drilling of the well and the running of the 7-in. casing string and the top part of the next hole. This method has one advantage in that it allows for adjustment of the drilling line before it is subjected to its maximum load. It also prevents the driller from getting careless because of a new line in his handling of the pipe.

A contributing factor in increasing the amount of service obtained from a line is the use of guides on the fast line. These are practically standard equipment on every drilling rig, but the location of the guide has become as important as its use on a rig. Gulf Coast drillers have discovered that the whip of the line, which causes balling on the drum and excessive line wear, can be almost entirely eliminated by locating the guide high in the derrick, at about sixth girt. Originally the guide was located just above the drum, but it has been getting steadily higher.

Companies and drilling contractors differ widely in the number of lines strung through the

Two 20-in. mud pumps are used for circulating the drilling fluid while a smaller pump is used for mixing the mud

blocks at different depths. In some cases, eight lines are strung at the start of the well and this arrangement continued until just before running the long string when 10 lines are strung. Other crews string six lines at the start of the hole, go to eight lines just before running the intermediate string and then 10 lines just before running casing. In other cases the drilling crews may go back to six lines for a time after running the intermediate string. To a great extent this is dependent on the particular rig, the number of lines increasing the time to go in the hole but decreasing the strain on the fast line and on the hoist and engine. The larger rigs can handle safely the long strings of pipe with only six lines while the lighter rigs must have a greater mechanical advantage at this point. All of the Gulf Coast hoists have four speeds and where eight lines are used throughout the drilling of the entire hole the high-high is geared up and the speed of the fast line increased.

As the upper sediments in the Gulf Coast are very loose and unconsolidated, the method used is to drill a 24-in. hole to around 100 ft. and run

Height of substructure under derrick is often increased by cribbing up with timbers

a conductor pipe which prevents caving of the surface soil, while the 18-in. hole is drilled to about 1,500 ft., and the 13⅜-in. surface casing run. On the deeper wells a 12¼-in. hole is drilled to around 7,000 to 9,000 ft. and a protection string of 9⅝-in. casing is run. The remaining hole is drilled with an 8⅝-in. bit and the hole is cased with 7-in. o.d. casing. Cement used with the casing runs from 500 to 1,500 sacks with each string.

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string of 9⅝-in. casing is unnecessary, but generally in such cases the 13⅜-in. pipe is set to about 2,500 ft. and the long string set at around 9,000 ft. The elimination of a protection string vitally affects the cost of the completed wells. In many wells the casing is set to the total depth, but in other wells casing may be set to test a particular formation and then the hole drilled deeper. When a later pay horizon is encountered the well is equipped with a liner and screen. The drilling crews run the tubing and complete the wells.

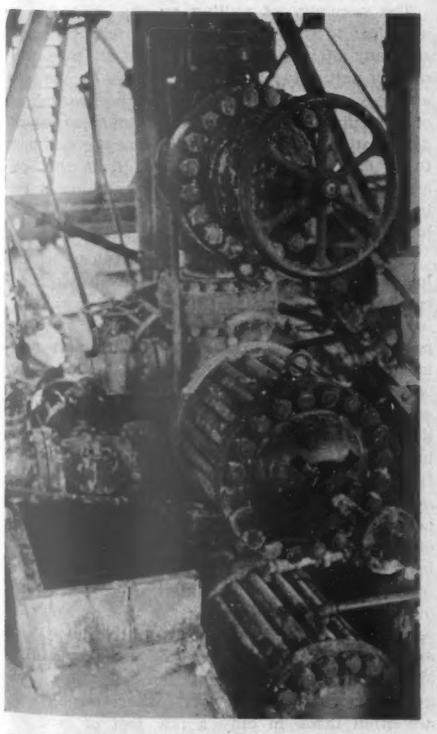
Drill pipe used ranges from A.P.I. full-hole pipe to the external upset, internal flush type with a large number of external-internal upset strings being in evidence. Principal advantage of the internal flush and near-internal flush is the ease of running and pulling the wire-line core barrel, the reduction in pump pressure, and the increased fluid capacity. Pressures will range from 1,100 lb. per sq. in. with a streamlined string to 1,250 and 1,300 lb. per sq. in. with a string having restrictions which impede the flow of the fluid. As important as the pressures involved are the volumes of fluid handled by the pump and put through the drill pipe. This is a highly variable factor depending on the pumps used, the steam pressure and the viscosity of the fluid. Very few pumps are equipped with the maximum-size liners while drilling at great depths as the steam pressure is generally insufficient to operate the pump at its maximum speed. Pumps having an 18-in. stroke generally have 6 or 6¼-in. liners and 20-in. pumps have 7 or 7¼-in. liners. Strokes per minute will range up to 40 on the smaller pumps and will be from 28 to 32 on the larger pumps. This gives a capacity of 403 g.p.m. from a 20-in. pump with 7-in. liners operating at 32 s.p.m. and 331 g.p.m. from an 18-in. pump with 6-in. liners operating at 40 s.p.m. Every effort is made to get as much mud through the pipe and up the hole as is possible, one of the methods used being the enlargement of the holes in the bit to ⅞ and 1 in.

One advantage enjoyed by drillers and operators on the Gulf Coast is the soft upper formations which can be easily cut with drag bits, thus decreasing the bit cost materially and increasing the cutting rate. Some wells have been drilled to 9,000 ft. in less than 25 days. It is not uncommon for a rig to be moved on the location, set 150 ft. of conductor pipe, wait 24 hours for cement to set, drill 1,500 ft. of 18-in. hole, run 1,500 ft. of 13⅜-in. pipe, wait 48 hours for cement to set, drill 5,500 ft. of 12¼-in. hole and set 7,000 ft. of 9⅝-in. casing in a total elapsed time of 21 days. The drag bits cost approximately one-fourth as much as the rock bits.

In one field where the lowest pay is encountered at 10,500 ft. it takes almost as many bits and as much time to drill to 9,000 ft. as it does to drill the remaining 1,500 ft. This is due to the encountering of hard formations which require a rock bit and the footage per bit is reduced sharply and the time required is increased. Rock bits are run as long as 36 to 48 hours and sometimes more with the footage per bit varying from 50 to 60 ft. In some areas a rock bit will be required for drilling about 500 ft. of hole at about 4,000 ft. after which drag bits are used to drill the next 1,000 ft., rock bits are used to drill the succeeding 1,500 ft., drag bits the next 2,000 ft. and rock bits for the balance of the hole. Total bits used in this particular field will be 14 drag bits and 14 rock bits.

Drag bits are generally of the four-way type and they will oftentimes stay in the hole as long as a rock bit before they are worn or become out of gage. Many operators use one or several reamers behind the drag bits, but some operators use no reamers, particularly after getting beyond 7,000 ft. Rock bits are of the roller-bearing type although many operators are using the two-cone type instead of the three-cone type which is used in areas which have hard formations. The matter of running reamers with rock bits is also a matter of preference.

One of the difficulties which has harassed drilling crews in the Gulf Coast, the sticking of



Under-the-floor connections on a deep well include rams and gate valves and lines for their operation and for killing the well. The drilling head through which it is possible to drill under pressure is not shown in this picture but it is located immediately above the top valve

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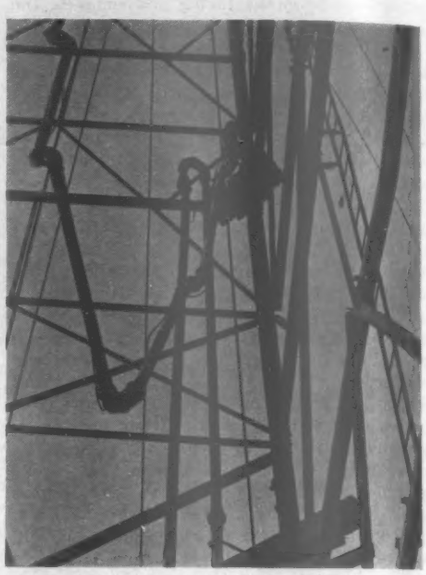
the drill pipe, has caused changes in many of the operating practices and it has particularly affected the amount of weight and the speed of rotation of the bit. The tendency in the early days was to make hole as rapidly as possible, which often led to sticking of the pipe due to key seating. This phenomenon has been described by several authors and is due to the pipe rubbing a narrow trench in the wall of the hole because of the hole being crooked. When an attempt is made to pull the bit through this narrow slot, it invariably sticks. This condition is evidenced by the fact that trouble is encountered only while pulling out of the hole and never while going in the hole such as is ordinarily caused by a caving hole.

For this reason, the drill pipe is run with just enough weight to make it dig, four points (8,000 lb.) being the maximum allowed by many contractors and companies. With this weight, a bit is skimming the surface and the plumb-bob effect is attained with only one drill collar and the hole is kept straight. It was also found the hole generally was kept in better condition by a slower rate of drilling as the burden carried by the mud stream is reduced considerably. In one area holes were formerly drilled in 65 days when heavy weight was applied to the bit, and now in the same field the drilling time has been increased to 90 days. However, the crews are almost certain to make the hole in that amount of time while under the old method about one out of every three holes encountered major difficulties with the pipe sticking, which increased time and costs for that well beyond all reason. There were also a larger number of twistoffs and the drill pipe had a short life in comparison to the present method in which 150,000 ft. for a string of pipe is approached if the pipe is managed properly.

Another practice influenced by the sticking of the pipe is the use of drill collars and reamers. These are expensive items and often the only way to continue drilling when the drill stem is stuck is to cut or shoot the drill collar off and then sidetrack it. In case three or four drill collars and a few sets of reamers are on the bottom of the string the loss in case this method must be



Two standpipes are rigged up on every job and in this case a rubber hose is connected to one and a steel hose is connected to the other

used is increased proportionately. Frequently this method is used as at depths of 7,000 to 8,000 ft. it is often cheaper to drill a new hole or sidetrack the fish than it is to keep on trying to get the pipe loose.

The necessity of pulling on the drill pipe in an effort to free it is one reason why there are so many strings of 18.10 lb. per ft. pipe. The pulling naturally puts a great stress on the pipe and if too great a pull is exerted the elastic limit of the pipe may be exceeded and permanent deformation results. This will cause the drill pipe to be crooked when it is pulled from the hole and straightening the pipe only eliminates the indications of trouble as minute fractures which later result in breakoffs will be present.

Much of the success of Gulf Coast deep drilling has been due to the development of electrical coring, coring with wire-line barrel, side-wall coring and core analysis. The wire-line barrel is particularly effective in wildcat drilling where it is essential that physical cores be obtained for correlation purposes. Occasionally the formations will be too hard to obtain a core with the wire-line barrel and a conventional core barrel will have to be used. In field drilling, after the location of enough formations has been determined, no coring will be attempted, the pay formation being identified by examination; an electrical log of the well is then run before the casing is placed in the hole. Side-wall cores are essential for obtaining samples of a formation after it has been drilled through. Points for the use of side-wall coring may be selected by an electrical log. The analysis of the cores shows the qualitative and quantitative content of the sand. This is of great importance in the areas where completions are often made in only a few feet of sand by plugging back to the upper pays after the well has been drilled in search of deep production.

The greatest factor in deep drilling has been the development of a satisfactory technique in mud

(Continued on Page 186)

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WITH the recent addition of several new plants, installation and enlargement of others under way, and work scheduled to be started on a number of other projects in the near future, recycling and pressure-maintenance operations on the Gulf Coast are being materially expanded. Considering this, building of such plants is expected to become an increasingly important phase of activity in the district.

Most recent of the new plants which have been placed in operation are those of the Coastal Recycling Corp. and the L. M. Lockhart Co., both in the Agua Dulce field, Nueces County, lower Gulf Coast district. The latter has been completed only within the past 30 days, while the Coastal plant has been running since the latter part of December.

Four recycling projects are now operating in this field alone. Besides the above, plants are being operated by Agua Dulce Corp. and Process Oil Co., the latter being the pioneer installation. In addition to these, Corpus Christi Corp. is carrying on recycling operations in the Stratton field, just south of Agua Dulce. It is in the Agua Dulce-Stratton area that recycling has found its most extensive and concentrated application to date.

To augment these operations, Gulf Plains Corp., which is controlled by practically the same interests owning the Corpus Christi Corp. and the Coastal Recycling Corp. is building another plant in the Sullivan area, at the south end of the Agua Dulce field, just north of the Stratton pool. This plant is to be almost a duplicate of the Coastal Recycling Corp. installation.

The latter so far has the distinction of being the largest recycling plant ever built. It was designed to process between 125,000,000 and 130,000,000 cu. ft. of gas daily, serving an area of approximately 12,000 acres. Its operation provides for the recovery of condensate at absorption pressures up to 1,500 lb., an important factor in reducing compressor power required for return of residue gas to the formation.

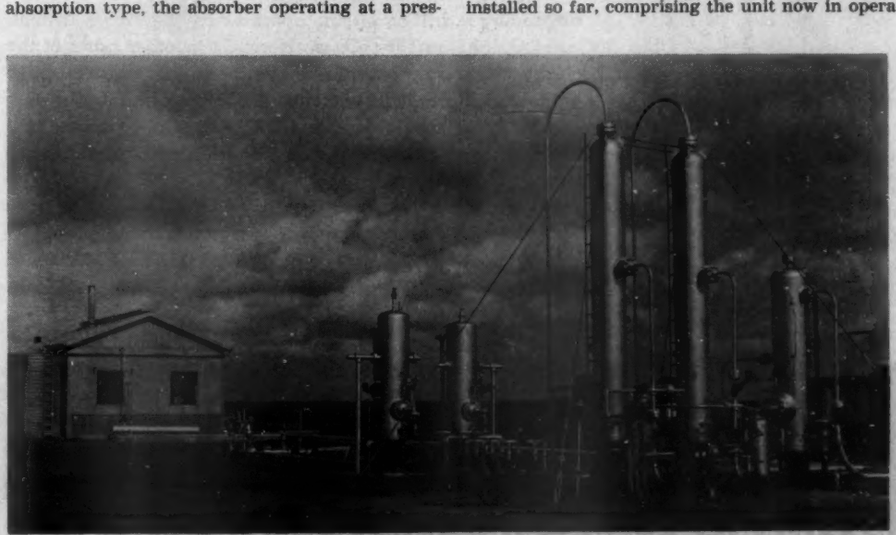
Capacity of the Lockhart plant, the most recently completed installation, is about 30,000,000 cu. ft. daily with the yield being about 30,000 gal. of finished products. Gasoline content of the produced gas varies from 0.5 to 1.5 gal. per 1,000 cu. ft.; the content of the residue gas, which is returned to the formation under a pressure of 2,200 lb. per sq. in., is 0.0032 gal. per 1,000 cu. ft. by charcoal absorption test. The plant is of the high-pressure absorption type, the absorber operating at a pressure of 1,200 lb. per sq. in., the high efficiency of the plant being due to the reabsorption of vapors from the vent tanks. About 40 per cent of the gasoline is recovered in the scrubbers on the field lines coming into the plant; the other 60 per cent is recovered in the absorption and distillation process. Two 600-hp. six-cylinder angle-type compressors are used for increasing the pressure on the residue gas; a single-cylinder compressor is used in conjunction with the readsorber.

Two Recent Additions

Both Agua Dulce Corp.'s plant and that of Corpus Christi Corp. were completed early in 1939, although additions have been made at each of them since then. The former now has a capacity of upwards of 100,000,000 cu. ft. of gas daily, while the Corpus Christi Corp. plant is rated around 60,000,000 cu. ft. daily. Unlike the other plants, the latter employs expansion and refrigeration to effect recovery of the liquid hydrocarbons of the gas. Like that of the new Coastal plant, the recovery unit of the Agua Dulce Corp. plant is of the high-pressure absorption type although it was designed to operate at pressure of only 1,200 lb.

Harrison & Abercrombie expect to complete their new pressure-maintenance plant at Old Ocean, Brazoria County, within the next 60 to 90 days, although it is possible that with further development in that field the plant may be further enlarged. Part of this plant has been in experimental operation for several months with the present construction representing installation of additional units to meet the growing requirements in that field.

In view of the exceptionally high pressure encountered in this field and the great depth of the formations to which the gas is returned, this project is a particularly interesting undertaking. The field is producing from sands around 10,000 ft. with flowing pressures exceeding 4,000 lb. Eight 600-hp. compressors, all of which because of their size had to be built to order, have been installed so far, comprising the unit now in opera-

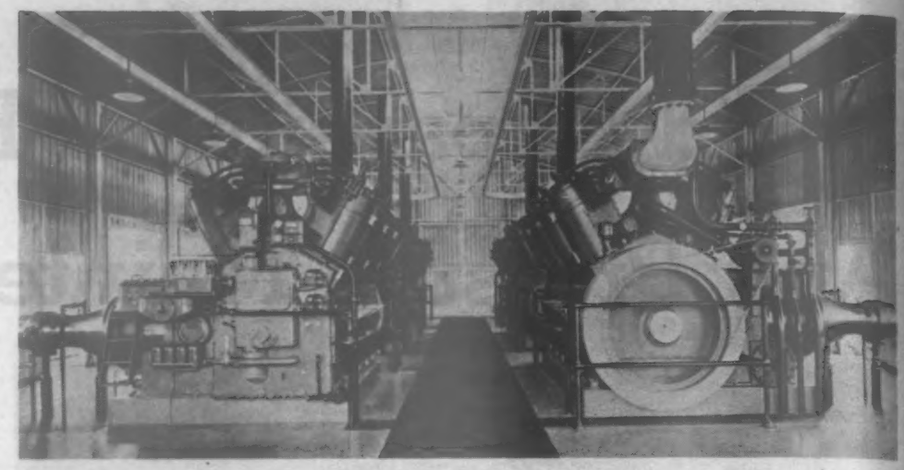


Sun Oil Co.'s plant at Willow Slough field, Chambers County, Texas. The distillate is recovered in the separators

tion. The project has involved the installation of an absorption unit, which is in operation, but so far the residue gas from this has been needed for other purposes. Gas being recycled is taken direct from high-pressure separators, through which field production is run, at a suction pressure of from 1,500 to 2,000 lb., and then boosted in stages to a discharge pressure of upwards of 4,200 lb. for reinjection into the reservoir.

The Old Ocean project differs from the recycling projects in the previously mentioned Agua Dulce area in that it is designed strictly for pressure maintenance in an oil-producing horizon. Production at Agua Dulce is classified as condensate or distillate, in which recovery is governed by the laws of retrograde condensation.

Another major pressure-maintenance project is being undertaken by Continental Oil Co. at Villa Platte, Evangeline Parish, coastal Louisiana. Like the Old Ocean plant it has been built in units.



Battery of compressors in the plant belonging to Harrison & Abercrombie in the Old Ocean field, Brazoria County, Texas. The plant is not yet completed and may be further enlarged in the future

some of which already are in operation, but the plant will not be entirely completed for several months. Although this plant embraces a number of new ideas and practices, its installation is similar to that of the same company's plant at Tepetate, Acadia Parish, which has been running several years, and which has been previously described. The essential difference in operation hinges on the greater depth of the producing sands, which at Villa Platte are from 9,000 to 10,000 ft.

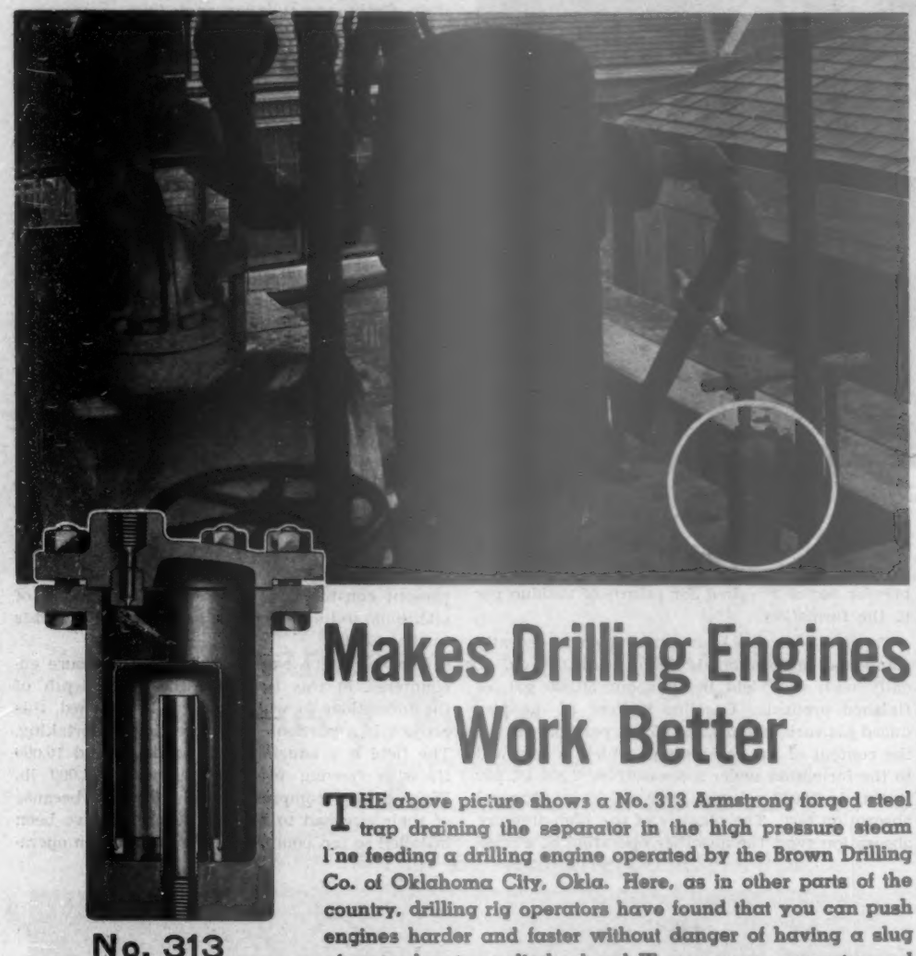
Building Two Recycling Plants

Construction is due to get under way immediately on at least two additional recycling plants, one in the East Alice field, Jim Wells County, and the other in the La Rosa field, Refugio County. The former is to be built by W. R. Davis & Co. It will have a capacity of more than 60,000,000 cu. ft. of gas daily. The company some time ago obtained the gas rights under more than 1,670 acres, covering leases of more than 10 independent operators. Gas from two sands, one at 4,700 ft., and the other at 5,100 ft., will be recycled. The condensate-recovery unit will be of the absorption type, operating at high pressure.

View of the absorption, distillation and stabilization towers in the Lockhart plant at Agua Dulce

The La Rosa plant will be built by Coronado Oil Co., one of the larger operators in the field. It will have a capacity of about 50,000,000 cu. ft. of gas daily and will effect recovery of condensate by high-pressure absorption.

Pure Oil Co. is making a study of gas production and conditions in its new east-extension area of the Dickinson-Gillock field, Galveston County, with a view toward possible installation of a recycling plant. So far no definite plans have been formulated, nor has it definitely been determined



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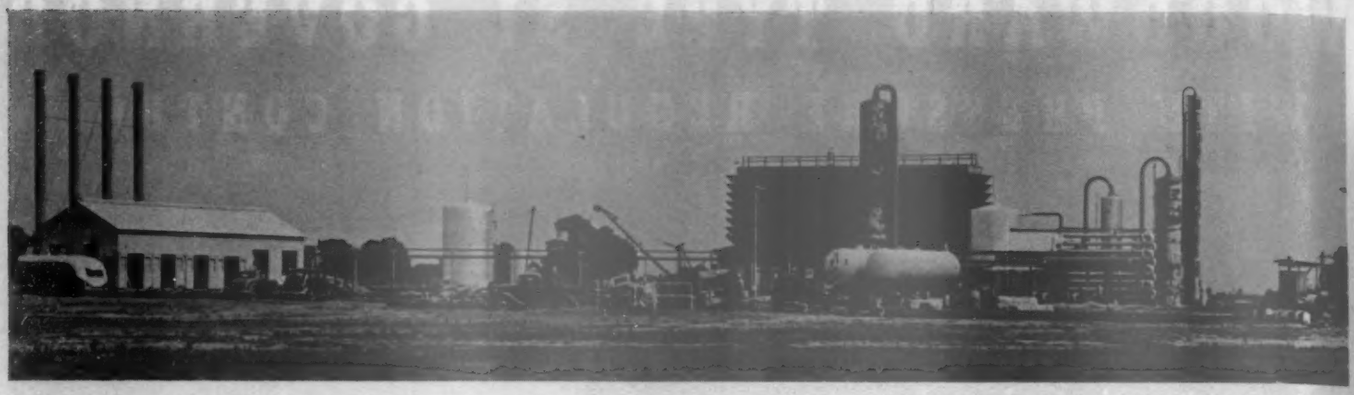

General view of one of the new plants being erected in the Aqua Dulce field, at the present time the center of recycling operations in the Gulf Coast area

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to put in a plant, as the course to follow will depend on results of the tests and other factors.

A recycling plant also is contemplated for the McAllen field, Hidalgo County. Work of unitizing a block of more than 3,600 acres bordering McAllen on the east is being completed, and as soon as this is done, a development program calling for recycling operations will be undertaken by Dr. Burton McCollum, president of McCollum Exploration Co., of Houston. The structure on which this development is to be undertaken underlies the east side, if not all, of the McAllen townsite, but drilling within the townsite has been barred. The discovery well, a distillate producer completed a couple of years ago at a depth of 7,500 ft., is located just east of the townsite. Another distillate well, completed around 6,000 ft., also has been drilled near Phan on the east side of the block. Both have been shut in except for small volumes of gas taken for domestic purposes.

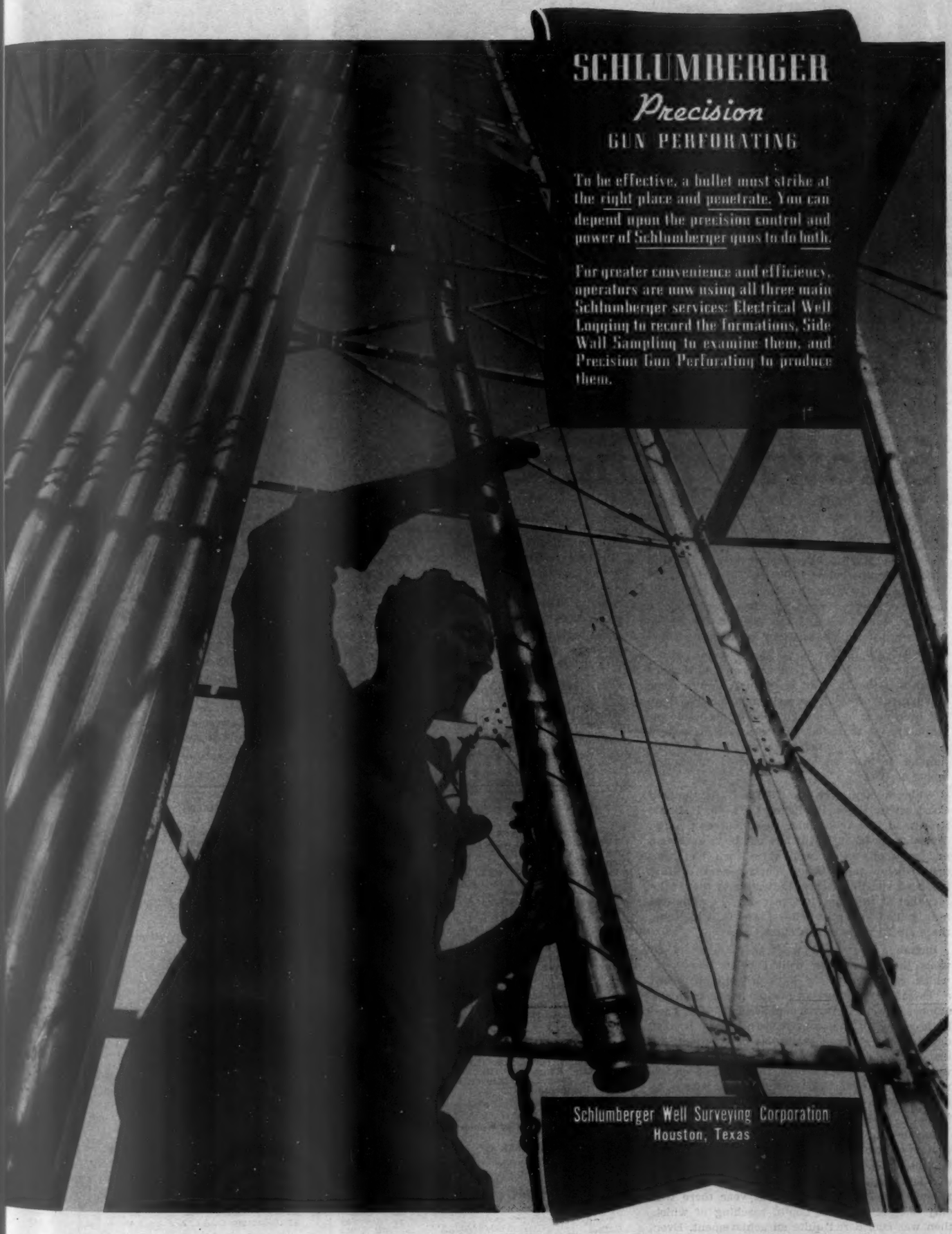
Dr. McCollum also is head of the Pantana Petroleum Corp., which has been carrying on repressuring operations in the Lablanca-Engleman field, Hidalgo County. The operations, described elsewhere in this issue, embrace individual well units. The gas produced from two high-pressure sands, one at 7,500 ft. and the other at 8,000 ft., is injected, after extraction of fluid content, into a 7,900-ft. sand in which formerly high pressures were greatly reduced during a period of forced wide-open production, resulting in precipitation of fluids in the sand. There, it is anticipated that by building up pressures in that sand these fluids eventually will be recovered Extraction there is effected by differential in pressures between the producing and input sand.

Proposed plants take in a large number of other distillate fields scattered over the Gulf Coast, both in Texas and in Louisiana. While so far nothing definite has materialized on most of these, it is considered practically assured in several instances that the projects will be undertaken.

In addition to those listed, there are three other recycling plants on the Gulf Coast, all of which have been running a year or longer. Two of these are operated by Sun Oil Co., one at Seabreeze and the other at Willow Slough, adjoining fields in Chambers County, Texas. The third plant is that of H. M. Harrell in the Bammel field, Harris County. All three recover the distillate content in separator expansion, compressor suction being taken direct from the top of these separators.

Causeways Are Expensive

Preparing roadways to drilling sites often costs as much as the actual drilling of the wells in the Gulf Coast area. Causeways approaching a mile in length are built out into the bays and inlets from the shore. Driving the piling, laying the runners and flooring with boards costs approximately $13 per foot. In addition, platforms for equipment and working space must be built around the drilling site.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View in the Old Ocean pool, where the lowest producing zone is below 10,000 ft.

Derricks in a Louisiana field, where recent discoveries have caused a deeper drilling campaign

Deep Development Showing Increase

ACCORDING to a compilation just completed, 349 wells, including active operations of the week ended April 6, have been drilled on the Gulf Coast to depths below 10,000 ft. This reflects the widespread extent of the exploration and development of lower horizons that has been going on the past several years in this district. Possibly in no other district has so many wells been drilled to such depths.

Of the total, 175 wells have been added since about this time a year ago. Thus, despite some curtailment of field operations generally, there has been no letup in exploitation of deep-sand potentialities. Seventy-four of these wells have been added this year, which is more than half the number of 10,000-ft. wells completed during the whole of 1939.

While the depth record of 13,728 ft. for the Gulf Coast set by Union Producing Co.'s No. 1 Minnie Brown, in the Agua Dulce field, Nueces County, Texas, early in 1939 still has not been exceeded, and only one other well since then has been drilled below the 13,000-ft. mark, general drilling has been steadily deeper. Indicative of this is the fact that at this time last year only 14 wells had been drilled to depths below 12,000 ft., while now there are 25 wells in this class.

Including the above wells there now are 95 wells that have been drilled below 11,000 ft., which, compared to the 43 such wells on record a year ago, represents an outstanding gain in the number of wells in this group. So many wells have been carried to depths of 10,000 to 11,000 ft. that development at these levels has become more or less common and routine. Not counting the deeper wells previously enumerated, there have been 259 wells on the Gulf Coast drilled below 10,000 ft. At this time last year there were only 131 such wells.

Considering that it was not until 1934 that any well on the Gulf Coast reached the depth of 10,000 ft., the extent of exploration and development that has taken place at such levels is particularly noteworthy. At the end of that year there was only one well at that depth, reaching of which then was considered quite an achievement. Even up to 1937 only seven wells had drilled to 10,000 ft., with none to 11,000 ft. Consequently practically all development to depths below 10,000 ft. has taken place since 1937.

Drilling to 10,000 ft., and even to 11,000-ft. depths, on the Gulf Coast now is being carried with about as much ease and assurance as 8,000-ft. and 9,000-ft. wells were drilled 3 or 4 years ago, or 5,000 to 6,000-ft. wells 10 years ago. Coastward, particularly in Louisiana, few operators start exploratory wells now without expecting to go to 10,000 ft. or lower.

Heavier Equipment Required

Expediting this deeper drilling has been the provision of larger and heavier equipment and more adequate and adaptable drilling facilities along with the development of more efficient and effective practices. Some of the most impressive assemblies of drilling equipment available are now operating on the Gulf Coast, and with the increasing knowledge of how to cope with the various problems encountered, operators are finding it possible to drill to constantly lower levels with less and less trouble.

The confidence of success with which Gulf Coast operators now start drilling to great depths is indicated in the attitude of drilling contractors in taking contracts for deep wells. Some contractors now are assuming contracts even for 12,000-ft. holes while 10,000-ft. contracts are fairly com-

(Continued on Page 175)

PRODUCING WELLS BELOW 10,000 FT., BY FIELDS

Field, and *county or parish—	Wells below 13,000 ft.	Wells 12,000-13,000 ft.	Wells 11,000-12,000 ft.	Wells 10,000-11,000 ft.	Total wells below 10,000 ft.
Abbeville, Vermilion (L)	0	0	0	2	2
Anchor, Brazoria (T)	0	0	0	2	2
Bateman Lake, St. Mary (L)	0	0	0	4	4
Bay Baptiste, Terrebonne (L)	0	0	1	0	1
Delarge, Terrebonne (L)	1	0	0	0	1
Delta Farms, La Fourche (L)	0	0	1	0	1
Erath, Vermilion (L)	0	0	1	0	1
Golden Meadow, La Fourche (L)	0	0	0	3	3
Horseshoe Bayou, St. Mary (L)	0	0	1	5	6
Jeanerette, St. Mary (L)	0	0	0	1	1
Keilworth, St. Bernard (L)	0	0	0	1	1
La Pice, St. James (L)	0	0	1	1	2
Lafitte, Jefferson (L)	0	0	0	29	29
La Fourche Crossing, La Fourche (L)	0	0	0	1	1
Lirette, Terrebonne (L)	0	0	1	0	1
North Crowley, Acadia (L)	0	0	0	1	1
Lake Long, La Fourche (L)	0	0	0	2	2
Old Ocean, Brazoria (T)	0	0	0	49	49
Paradis, St. Charles (L)	0	0	0	2	2
Raceland, La Fourche (L)	0	0	0	4	4
Saxet, Nueces (T)	0	0	0	2	2
South Roanoke, Jeff Davis (L)	0	0	0	1	1
South Houma, Terrebonne (L)	0	0	0	1	1
Villa Platte, Evangeline (L)	0	0	0	6	6
West Lake Verret, St. Mary (L)	0	0	1	0	1
Venice, Plaquemines (L)	0	0	0	1	1
Total	1	0	7	118	126

*County in Texas (T); parish in Louisiana (L).

NUMBER OF TESTS DRILLED BELOW 10,000 FT. ON GULF COAST, BY YEARS*

Depth—	†1940	1939	1938	1937	1936	1935	1934	Total
Below 13,000 ft.	0	2	3	0	0	0	0	5
12,000 to 13,000 ft.	2	11	2	5	0	0	0	20
11,000 to 12,000 ft.	18	25	19	3	0	0	0	65
10,000 to 11,000 ft.	54	104	63	31	2	4	1	259
Total	74	142	87	39	2	4	1	349

*Date based on year well completed. †Includes tests drilling.

mon. It was not so long ago that contractors were reluctant to take responsibility for completing wells down to 8,000 and 9,000 ft. To go deeper, operators generally had to take over the responsibility, if not the actual drilling. This was due not to the fact that contractors were not as capable operators as oil companies themselves, but rather to the fact that the hazards then were considered so great contractors preferred not to take the risk.

With deeper drilling on the coast, an increasing volume of production continues to be proved up at successively lower levels, which, in turn, is providing constant incentive for exploration at lower levels. There are 26 fields scattered over the Gulf Coast in which production has been established below 10,000 ft. In 12 of these fields such production was opened the past year.

In the 26 fields, seven have production in sands from 11,000 to 12,000 ft., while Bayou De Large, Terrebonne Parish, Louisiana, continues the only field in which any production is below 12,000 ft. In the latter field the discovery well (Fohs Oil Co.'s No. 1 Buckley & Bourg), completed in July 1938, in a sand at a total depth of 13,333 ft., remains the only producer, and after nearly 2 years of life still holds the distinction of being the world's deepest producing well. Exploration in sands from 12,000 to 13,000 ft. has not yet yielded any commercial production at those levels.

The list of wells producing at levels below 10,000 ft. totals 126, of which 118 were completed in sands from 10,000 to 11,000 ft., leaving 7, one for each of the 11,000-ft. producing fields, producing from depths of 11,000 to 12,000 ft., and the Fohs well at Bayou De Large, with production below 13,000 ft.

First 11,000-ft. production has just been opened at three of the fields within the past month. These are West Lake Verret, St. Mary Parish; Delta Farms, La Fourche Parish; and Erath, Vermilion Parish, all in Louisiana. Prospects of a 11,000-ft. producer also were given on the Hayes prospect, Jefferson Davis Parish. There Continental Oil Co.'s No. 1 Nibblet, drilled to a total depth of 11,748 ft., was perforated in sand at 11,604-24 ft. and was on production for a short time but salt water broke in and the well was killed for a squeeze job.

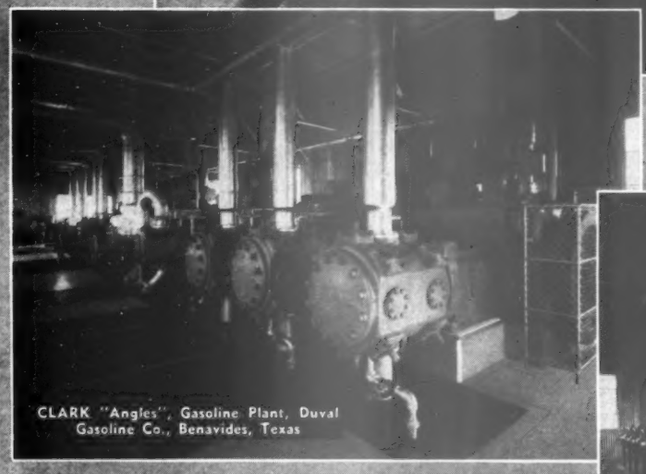
Old Ocean, Brazoria County, Texas, and Lafitte, Jefferson Parish, Louisiana, so far have been the most extensively developed of the deep fields, accounting for 78 of the total number of wells completed to date below 10,000 ft. Both are producing from 10,000-ft. sands. Of the 26 deep producing fields, 20 are producing from 10,000-ft. sands, although 2 of these are also among the 11,000-ft. fields.

The widespread nature of the deep exploration and development that has been done is indicated in the fact that the deep wells drilled have been scattered over more than 100 different fields and acres. Only in Old Ocean and Lafitte has there been any concentration of deep drilling. As can be noted in accompanying tables, however, Louisiana continues to lead Texas in the number of deep tests, which is accounted for by the thicker depositions in that district, making it necessary to drill to greater depths to reach the same comparative horizons.

WELLS DRILLED BELOW 11,000 FT. IN SOUTH TEXAS AND COASTAL LOUISIANA

Company and well—	Field or area	County or Parish	Total depth	Comp. depth	Date comp.	Status
Union Producing Co.'s No. 1 Minnie Brown	Agua Dulce	Nueces (T)	13,728	4,603	2-39	Gas well
Fohs Oil Co.'s No. 1 Bay Baptiste	Bay Baptiste	Terrebonne (L)	13,409	11,178	8-38	Producer
Fohs Oil Co.'s No. 1 Buckley & Bourg	DeLarge	Terrebonne (L)	13,333	13,266	7-38	Producer
Fohs Oil Co.'s No. 1 Buckley-Mahler	DeLarge	Terrebonne (L)	13,270	.....	9-39	Abandoned
Stanolind Oil & Gas Co.'s No. 3-B Calcasieu	South Elton	Jeff Davis (L)	13,210	.....	6-38	Abandoned
Continental Oil Co.'s No. 1 Peters	Wildcat	Terrebonne (L)	12,800	.....	1-40	Abandoned
Texas Co.'s No. 2 State	Horseshoe Bayou	St. Mary (L)	12,770	11,792-11,847	4-39	Producer
Texas Co.'s No. 1 L. L. & E.	Golden Meadow	La Fourche (L)	12,526	2,675-80	7-39	Producer
Texas Co.'s No. 1 Continental	Wildcat	Terrebonne (L)	12,483	.....	2-39	Abandoned
Texas Co.'s No. 1 State	Horseshoe Bayou	St. Mary (L)	12,261	10,873	8-37	Producer
Texas Co.'s No. 1 L. L. E. Bastian Bay	Wildcat	Plaquemines (L)	12,256	.....	6-39	Abandoned
California Co.'s No. 1 Adam Rutley	Barataria	Jefferson (L)	12,222	8,204-14	11-39	Producer
Continental Oil Co.'s No. 1 C. C. Hebert	Abbeville	Vermilion (L)	12,216	7,682	2-37	Producer
Amerada Petroleum Corp.'s No. 2 South Coast	Raceland	La Fourche (L)	12,200	.....	11-38	Abandoned
Gulf Refining Co.'s No. 2 Grandison	Wildcat	La Fourche (L)	12,200	.....	11-39	Abandoned
Humble Oil & Refining Co.'s No. 1 H. S. Ellender	Lirette	Terrebonne (L)	12,168	11,615	5-37	Producer
Continental Oil Co.'s No. 1 Berstein	Wildcat	Jefferson (L)	12,149	.....	12-39	Abandoned
Stanolind Oil & Gas Co.'s No. 1 Stovall	South Abbeville	Vermilion (L)	12,133	.....	2-37	Abandoned
Texas Co.'s No. 5 State	Fausse Point	Iberia (L)	12,125	.....	5-39	Abandoned
Texas Co.'s No. 1 Bayou Norman	Lafitte	Jefferson (L)	12,115	9,630	11-37	Producer
Continental Oil Co.'s No. 1 Joe Sturdivant	South Roanoke	Jeff Davis (L)	12,088	9,880	10-38	Producer
Continental Oil Co.'s No. 1 La Terre Co.	Wildcat	Terrebonne (L)	12,080	.....	12-39	Abandoned
Gulf Refining Co.'s No. 1 State R. R.	Lake Borgne	St. Bernard (L)	12,036	.....	.....	Active
Texas Co.'s No. 3 State	Horseshoe Bayou	St. Mary (L)	12,030	.....	12-39	Abandoned
Gulf Refining Co.'s No. 1 Grandison	Wildcat	La Fourche (L)	12,013	.....	6-39	Abandoned
Texas Co.'s No. 1 School Board	Lafitte	Jefferson (L)	11,961	.....	2-39	Abandoned
Humble O. & R. Co.'s No. 1 Milliken & Farewell	Wildcat	Assumption (L)	11,960	.....	3-39	Abandoned
Union Producing Co.'s No. 1 Fudenburk	Lirette	Terrebonne (L)	11,933	.....	6-38	Abandoned
Continental Oil Co.'s No. 1 Brookshire	Abbeville	Vervilion (L)	11,909	7,890	11-37	Producer
Shell Oil Co., Inc.'s No. 4 Jeanerette	West Lake Verret	St. Mary (L)	11,890	11,348-53	4-40	Producer
Texas Co.'s No. 1 Bateman Lake	Wax Lake	St. Mary (L)	11,879	10,905	12-37	Producer
Tide Water Associated Oil Co.'s No. 1 Delta Farms	Delta Farms	La Fourche (L)	11,850	11,290-11,305	3-40	Producer
Shell Oil Co., Inc.'s No. 1-A Peters	South Houma	Terrebonne (L)	11,808	.....	10-39	Abandoned
Humble Oil & Refining Co.'s No. 1 Robert Veret	Lirette	Terrebonne (L)	11,767	8,460	10-38	Producer
Texas Co.'s No. 1 Vermilion	Erath	Vermilion (L)	11,762	11,378-80	4-40	Active producer
Continental Oil Co.'s No. 1 Niblett	Hayes	Jeff Davis (L)	11,748	.....	3-40	Active producer
Phillips Petroleum Co.'s No. 1 Whitney	Wildcat	St. Mary (L)	11,710	.....	4-39	Abandoned
Union Sulphur Co.'s No. 3 Miami Corp.	Wildcat	Cameron (L)	11,693	.....	10-38	Abandoned
Humble Oil & Refining Co.'s No. 2 Hanszen	Chalkley	Cameron (L)	11,693	8,568	11-38	Gas well
Humble Oil & Refining Co.'s No. 1 La Terre	Lirette	Terrebonne (L)	11,680	8,455	1-39	Gas well
Shell Oil Co., Inc.'s No. 1 Michel	West Lake Verret	St. Mary (L)	11,678	.....	11-39	Abandoned
Humble Oil & Refining Co.'s No. 1 C. P. Smith	Lirette	Terrebonne (L)	11,656	.....	6-39	Abandoned
Herton Oil Co.'s No. 1 Teche Sugar Co.	Jeanerette	St. Mary (L)	11,634	.....	2-38	Abandoned
Continental Oil Co.'s No. 2 Robbins	Citrus Grove	Matagorda (T)	11,612	.....	5-37	Abandoned
Humble Oil & Refining Co.'s No. 2 H. J. Ellender	Lirette	Terrebonne (L)	11,610	8,366-81	4-39	Producer
Shell Oil Co., Inc.'s No. 1 C. S. Ellis	Wildcat	Assumption (L)	11,610	.....	8-39	Abandoned
Texas Co.'s No. 2 State	Bateman Lake	St. Mary (L)	11,609	8,675-85	10-39	Producer
Texas Co.'s No. 1 St. Mary Parish	Bateman Lake	St. Mary (L)	11,589	10,663-83	12-39	Producer
Texas Co.'s No. 3 L. L. & E Paradis	Paradis	St. Charles (L)	11,555	10,187-10,212	3-39	Producer
Shell Oil Co., Inc.'s No. 1 C. S. Ellis	Wildcat	Assumption (L)	11,561	.....	1-40	Abandoned
Continental Oil Co.'s No. 1 David Meaux	Abbeville	Vermilion (L)	11,545	.....	2-40	Abandoned
Vendome Petroleum Corp.'s No. 1 Kenilworth	Kenilworth	St. Bernard (L)	11,469	10,600-10	5-39	Producer
Glen McCarthy's No. 1 Andrau	Chocolate Bayou	Brazoria (T)	11,468	.....	.....	Active
Skelly Oil Co.'s No. 14-B Cobb	Van Vleck	Matagorda (T)	11,465	7,469	2-38	Producer
Texas Co.'s No. 3 State	Bateman Lake	St. Mary (L)	11,519	.....	.....	Active
Glen McCarthy's No. 2 Houston Farms	Chocolate Bayou	Brazoria (T)	11,520	.....	.....	Active
Phillips Petroleum Co.'s No. 2 J. S. Rice estate	League City	Galveston (T)	11,411	8,695-8,700	2-40	Producer
Shell Oil Co., Inc.'s No. 1 Lebermuth & Israel	La Pice	St. James (L)	11,402	11,340-55	1-40	Producer
California Co.'s No. 1 Schwing Lumber Co.	Wildcat	Iberville (L)	11,388	.....	4-39	Abandoned
Humble Oil & Refining Co.'s No. 1 Wurzlow	Lirette	Terrebonne (L)	11,347	.....	2-38	Abandoned
Fohs Oil Co.'s No. 3 State	Lake Long	La Fourche (L)	11,347	9,382	2-38	Producer
Shell Oil Co., Inc.'s No. 4 Peters	South Houma	Terrebonne (L)	11,344	.....	1-40	Abandoned
Continental Oil Co.'s No. 1 Mrs. Manuel	Reddel	Evangeline (L)	11,341	.....	7-39	Abandoned
Sun Oil Co.'s No. 1 Bayshore Farms	Palacios	Matagorda (T)	11,327	9,261	10-38	Producer
Shell Oil Co., Inc.'s No. 1 Shexnayder	La Place	St. James (L)	11,314	10,910-15	6-39	Producer
Amerada Pet. Corp.'s No. 1 Godchaux Sugars	Raceland	La Fourche (L)	11,312	.....	7-39	Temp. abandoned
Barnsdall Oil Co.'s No. 1 Nelson	Wildcat	Terrebonne (L)	11,288	.....	.....	Active
Phillips Petroleum Co.'s No. 4 Stewart	League City	Galveston (T)	11,270	.....	.....	Active
Vendome Petroleum Co.'s No. 2 Kenilworth	Kenilworth	St. Bernard (L)	11,234	.....	7-39	Abandoned
Herton Oil Co.'s No. 1 Thistlephlite	Wildcat	St. Landry (L)	11,220	.....	11-38	Abandoned
Shell Oil Co., Inc.'s No. 1-C Realty Operators	Wildcat	Terrebonne (L)	11,208	.....	8-38	Abandoned
Texas Co.'s No. 1 Wax Bayou	Wax Lake	St. Mary (L)	11,185	8,660	12-38	Producer
Texas Co.'s No. 2 L. L. & E. Paradis	Paradis	St. Charles (L)	11,170	10,295-10,340	12-39	Producer
Texas Co.'s No. 1 Petit Anse	Wildcat	Iberia (L)	11,155	.....	4-39	Abandoned
W. T. Burton's No. 1 State, Lake Pontchatrain	Wildcat	Orleans (L)	11,149	.....	7-39	Abandoned
Harrison & Abercrombie's No. 1 Copeland	Old Ocean	Brazoria (T)	11,136	10,677	1-38	Producer
Texas Co.'s No. 1 La Terre	Golden Meadow	La Fourche (L)	11,135	8,820	12-38	Producer
Texas Co.'s No. 3 Wax Bayou	Bateman Lake	St. Mary (L)	11,127	10,879-10	.....	Active
Amerada Petroleum Corp.'s No. 2 Godchaux	Raceland	La Fourche (L)	11,114	.....	2-39	Abandoned
Stanolind Oil & Gas Co.'s No. 1 Freeman	Katy	Waller (T)	11,090	7,385	8-38	Gas well
Harrison & Abercrombie's No. 1 C. W. Markle	Old Ocean	Brazoria (T)	11,079	10,453	8-39	Producer
Texas Co.'s No. 1 St. Mary Land Co.	Horseshoe Bayou	St. Mary (L)	11,067	10,909	12-38	Producer
Louisiana Land & Explin. Co.'s No. 1 La. Fur. Co.	Wildcat	Vermilion (L)	11,033	.....	6-39	Abandoned
Republic Prod. Co.'s No. 9 Lutcher Moore	Bancroft	Beauregard (L)	11,018	.....	10-39	Abandoned
Gulf Refining Co.'s No. 4-Q.Q. State	Quarantine Bay	Plaquemines (L)	11,014	8,149	10-38	Producer
Texas Co.'s No. 4 Wax Bayou	Bateman Lake	St. Mary (L)	11,007	9,610-31	3-40	Gas well
Shell Oil Co., Inc.'s No. 1 Godchaux	La Place	St. John the Baptist (L)	11,005	.....	11-38	Abandoned
Stanolind Oil & Gas Co.'s No. 1 Billeaud	Wildcat	Lafayette (L)	11,003	.....	11-39	Abandoned
Pan American Prod. Co.'s No. 3-A Community	Valentine	La Fourche (L)	11,001	.....	12-39	Abandoned
Shell Oil Co., Inc.'s No. 2 Peters	South Houma	Terrebonne (L)	11,001	.....	3-30	Abandoned

Five 800 H.P. CLARK "Angles", Coastal Recycling Co., Banquete, Texas

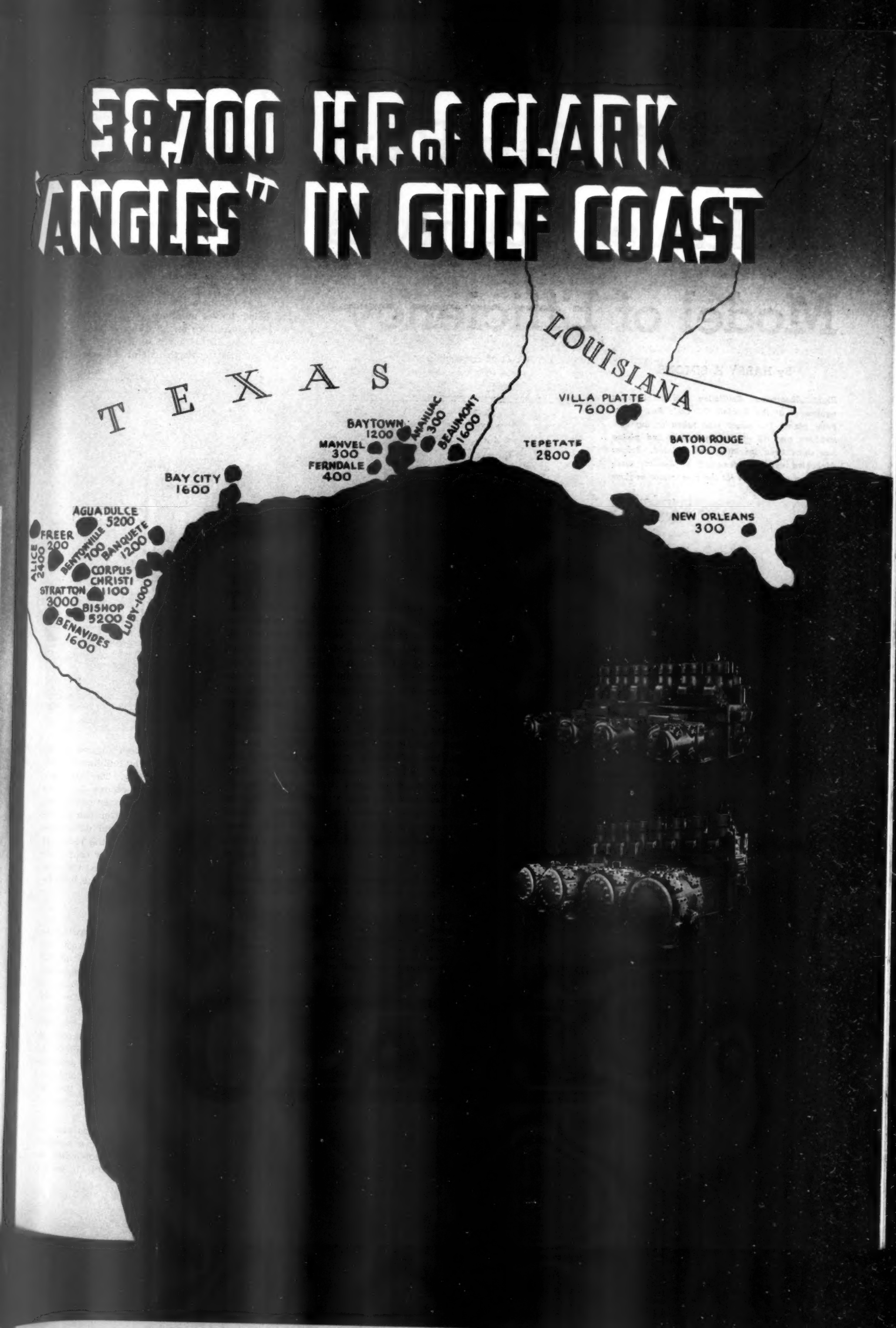


CLARK "Angles", Gasoline Plant, Duval Gasoline Co., Benavides, Texas

Four 600 H.P. CLARK "Angles", Recycling Plant, Corpus Christi Corp., Stratton, Texas

2,800 H.P. of CLARK "Angles", Repressuring Plant, Tepetate, La.

38,700 H.P. of CLARK "ANGLES" IN GULF COAST



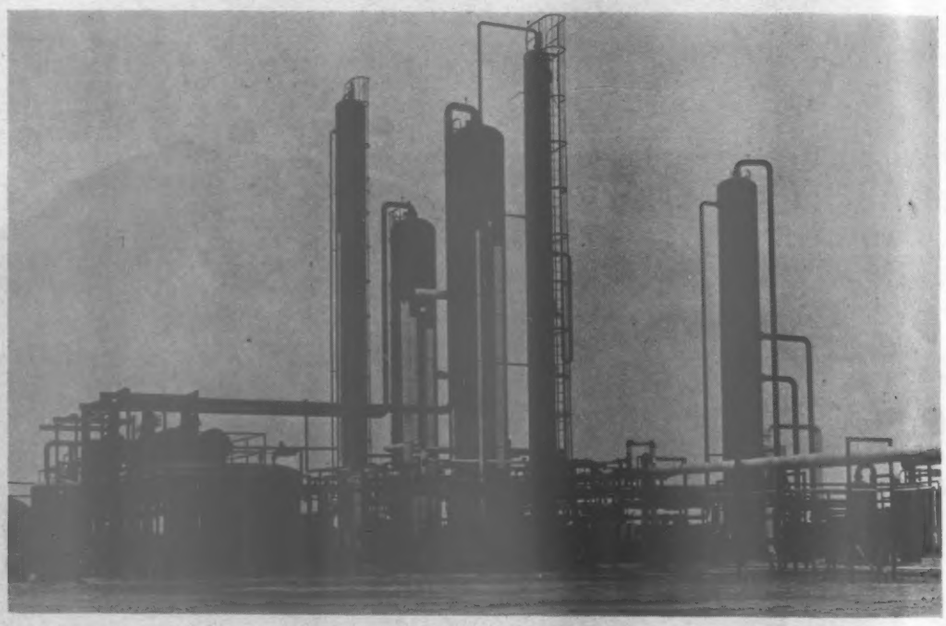
Sinclair's New Plant In Nueces County Is Model of Efficiency

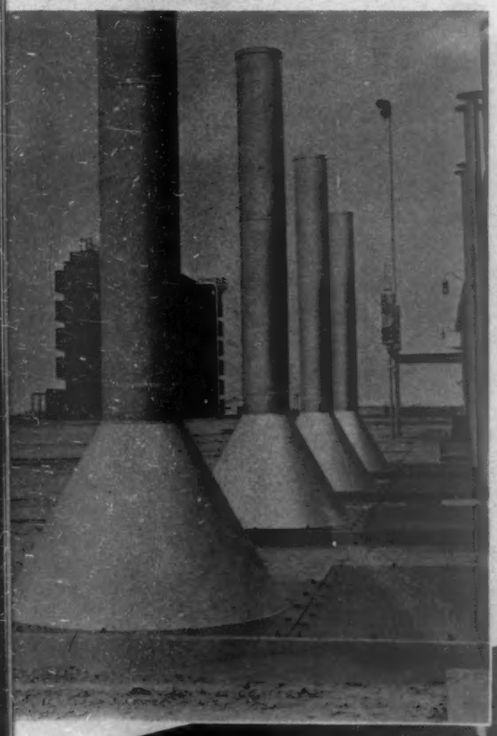
By HARRY F. SIMONS

GAS accompanying the 11,842-bbl. daily production from the East White Point field in Nueces County, Texas, is delivered to the recently constructed plant of the Sinclair Oil Co., where it is stripped of its gasoline content and the residue returned to the field. The plant, which has a present capacity of 7,000,000 cu. ft. daily, is designed so it can be enlarged easily whenever the production from the field warrants it. Compressor engines and electrical generating equipment were moved to their present location from plants that had suffered a decrease in throughput, while the boilers, distillation and absorption equipment, and the buildings are new.

The plant forms a large rectangle and consists of a boiler house, auxiliary room, engine room, a combination office and warehouse, and the absorption and distillation equipment. The boiler house occupies the north half of the east side of the rectangle with adequate room allowed for increasing this part of the plant by building a southward extension to the building. The auxiliary room and the compressor room occupy the north side of the rectangle and the former can be expanded to the east, while the latter can be expanded to the west. Absorption and distillation equipment occupy the west side of the rectangle and can likewise be expanded 100 per cent without disrupting operation of the plant. At the present time, work is going forward on the installation of four additional compressors.

Right: Absorption, distillation and stabilization equipment at the Sinclair Oil Co.'s East White Point plant. The photo was taken during construction and all of the equipment and piping has since been insulated and painted. Below: Air-cooled exhausts designed by Sinclair engineers act as mufflers for the compressor engines





Below: View of engine room showing how all of the piping is either high overhead or in concrete troughs covered with sheet steel. Engine-fume vents at the right

East White Point Field

The East White Point field is still growing, although it is defined on the north, northeast, and northwest. There are 186 producing wells at the present time and an offshore drilling campaign in Nueces Bay is in progress. Production is from the Frio sand at 5,600 to 5,700 ft. The field was discovered by Plymouth Oil Co.'s No. 1 Brigham, which flowed 9 bbl. of 38-gravity oil through 9/64-in. choke in 3 hours. Production was coming through perforations in the casing at 5,661-64 ft. The wells have a bottom-hole pressure of approximately 3,000 lb. per sq. in., while tubing and casing pressures, while flowing, vary with the different wells. Separator pressures range anywhere from atmosphere to 100 lb. per sq. in.

In addition to the 5,600-ft. sand, a gas sand at 4,800 ft. has been known to exist for a number of years. Recently an oil well was completed in the 4,800-ft. sand by the Houston Oil Co. on its

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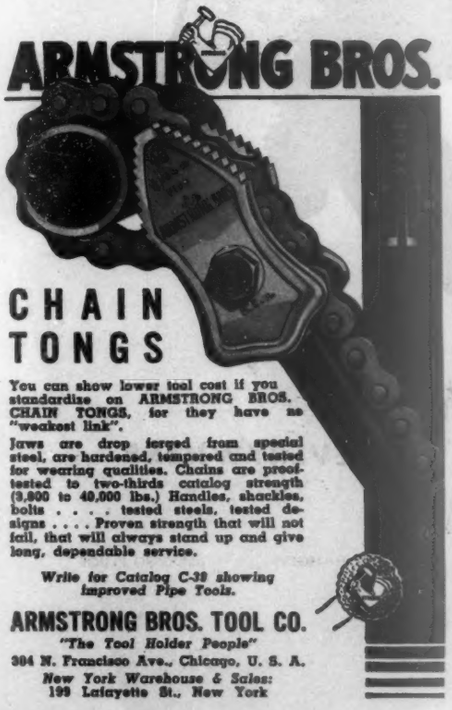

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Baldwin lease over near the old White Point gas field.

All of the wells in the East White Point field deliver gas to the gasoline plant through the 4-in. laterals and the 20-in. main lines which enter the 24-in. primary suction manifold. The gas enters the plant from both the east and west sides, a scrubber being located on the 20-in. lines approaching from those directions. In addition a third scrubber is already installed on the center of the suction line to care for future increases in the volume of gas expected to be produced from bay tracts. The scrubbers are 8 by 20 ft. and are equipped with safety alarms and cut-out switches to prevent fluid getting into the compressors. The primary intake manifold is 24 in. in diameter, the primary discharge and secondary intake manifolds are 16 in. in diameter, while the secondary discharge is 12 in. in diameter. The manifolds are equipped with bypasses for unloading the engines.

All of the intake and discharge manifolds are located on top of the ground or overhead instead of being underground. This prevents corrosion of the pipe and valves and affords ready inspection and repair of any defective parts. The elimination of corrosion increases the life of the pipe and fittings to the point where only minor replacements will be necessary until the field has been depleted and the plant dismantled. All control valves on the manifold are operated from a steel walkway.

Intake lines to the low-pressure side of the compressors are 10 in. in diameter and the discharge from the low side is 8 in. in diameter. The high compression side has a 6-in. discharge.

The engine room is 112 by 36 ft. long and is of structural steel on a concrete foundation. It houses six 170-hp. twin-cylinder two-stage compressors. The primary compression cylinders are 18-in. bore by 20-in. stroke and the secondary compression cylinders are 10½-in. bore by 20-in. stroke. Pressure on the intake of the primary side is 15 lb. per sq. in., while the discharge is 48 lb. per sq. in. On the secondary side the intake is 48 lb. per sq. in., while the discharge is 190 lb. per sq. in. Instead of being mounted directly on the engine, the gages showing the intake and discharge pressures are mounted on individual panels along the wall; the instrument board for any particular engine can be seen from any point around that engine. In addition to the gas-proof lighting in the building, every effort is made to prevent the collection of vapors from the engine end of the compressors. A breather stack located over each cylinder carries any escaping gas out of the building. The engines are also equipped with flywheel safety switches which will short out the magneto in case of overspeeding. Residue gas is used for fuel in the compressor engines.

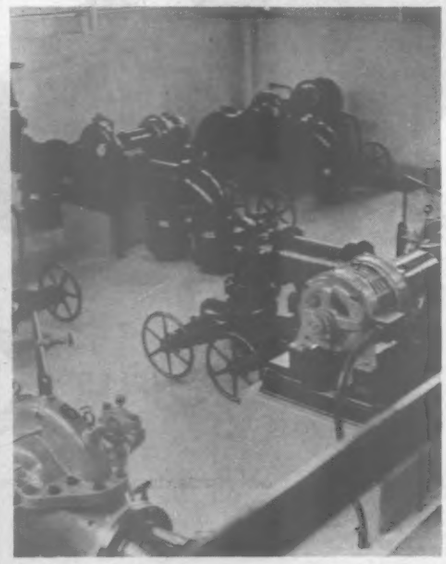
Exhausts from the engines are located immediately outside the north side of the building and were specially designed by Sinclair engineers. The exhausts are air cooled and are equipped with ¼-in. connections for obtaining samples of exhaust gases. Air going to the combustion chambers of the engines is cleaned as it goes through the air intakes, which are located outside the building.

Well heads in Nueces Bay are protected from the storm waves by concrete walls

The auxiliary building is 64 by 36 ft. and is the same type structure as the rest of the buildings, structural steel on concrete foundation. In the auxiliary building are located the electrical generating equipment and the pumps for handling water for cooling the engine jackets and for the distillation unit and condensers. Each of the two four-cylinder 165-hp. gas engines drives directly a 150-kw. 440-volt 60-cycle generator; the exciters for the generators are driven by V-belts. The switchboard for controlling the generating equipment and the distribution of the current was designed by Sinclair engineers and includes meters for showing the current being used by each pair of pumps and the load each generator is handling. A syncroscope and cycle meter are provided for connecting the generators when they are in synchronization, and special automatic switches were installed on the board. By engaging the switch, the generators are automatically connected together whenever they are synchronized.

Six single-stage centrifugal pumping units are also housed in the auxiliary building, each one being directly driven by a 15-hp. 1,725-r.p.m. electric motor. These pumps have a capacity of 1,000 g.p.m. against a 65-ft. head. Three of the pumping units provide water for cooling the engines and the other three handle the water for the distillation unit and the condensers. Each pump has a special drain for disposal of the water while priming the pump and also drains which dispose of any water coming from the pump glands. A two-stage air compressor driven by a 10-hp. motor for cranking the engine is also located in the auxiliary building.

Steam for operation of the plant is obtained from three Scotch marine-type boilers having a capacity of 150-hp. at 200-lb. per sq. in. working pressure. These boilers are quite different from the ordinary type oil-field boiler, although they are used for industrial purposes in other sections of the country. The boilers are equipped with automatic feed-water controls and low-water alarms which prevent any damage due to low water. The boiler-feed water is treated with soda ash and lime and is preheated in two vertical heaters having a combined capacity of 1,000



Six single-stage centrifugal pumps capable of 1,000 gal. per minute against a 65-ft. head driven by 15-hp. motors

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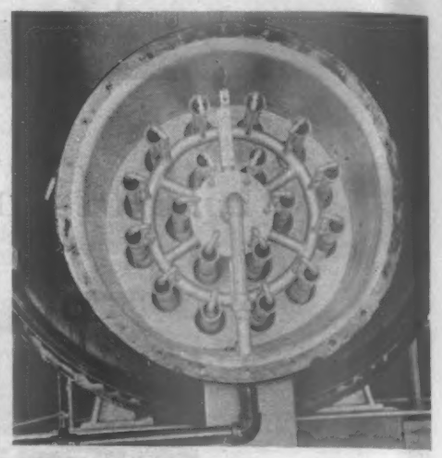
g.p.m.; the blowoffs on each boiler have special bypasses equipped with needle valves for continuous draining of sediment from the barrel of the boiler. The burners which provide the flame for heating the boilers were made at Seminole, Okla., from a design worked out by Sinclair engineers from 2-in. tubing, ⅝-in. pipe and jet tips. The normal pressure on the residue gas line is from 12 to 15 lb. per sq. in. although the burners will operate efficiently on 3 or 4 lb. per sq. in.

Feed water is forced into the boilers by two centrifugal pumps, one of which is driven by a steam turbine and the other driven by a 35-hp. electric motor. Both of these pumps have a capacity of 80 g.p.m. against a 550-ft. head. Another centrifugal pump driven by a 25-hp. electric motor provides protection in case of fire; it has a capacity of 600 g.p.m. against a head of 150 ft. Condensate water is handled by two centrifugal pumps each driven by a 3-hp. motor.

The counterstream absorber is 72 in. in diameter and 55 ft. high, the primary still is 66 in. in diameter by 45 ft. high and has a maximum operating pressure of 150 lb. per sq. in. and maximum temperature of 400° F., and the secondary still is 72 in. in diameter by 60 ft. high and has a maximum operating pressure of 75 lb. per sq. in. and a maximum temperature of 400° F. Absorption equipment also includes a scrubber, accumulator and condenser on both the high and low compressor discharge. There are also two heat exchangers for cooling the lean absorption oil and five preheaters for the fat oil. Two centrifugal pumps, one motor driven and the other steam turbine driven, are connected to the secondary still, two motor-driven centrifugal pumps are connected to the primary still, two motor-driven centrifugal pumps provide the reflux for the stabilizer and two more centrifugal pumps, one motor driven and one steam turbine driven, are used for charge pumps.

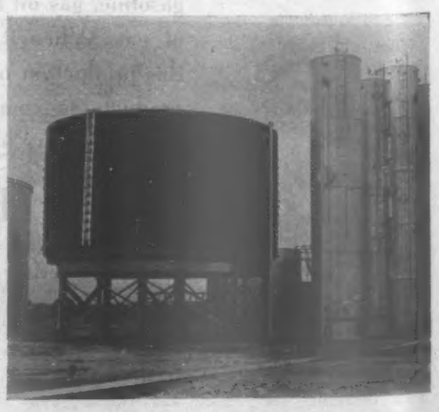
The stream from the primary discharge of the compressors is passed through the cooling tower and then through the low accumulator and back into the secondary suction of the compressors. After being compressed a second time, the gas is passed through a scrubber, condenser, accumulator and then into the absorber from which it passes through a heat exchanger into the primary still. Gasoline from the primary still goes through a condenser and accumulator and then to the surge tank and through the stabilizer into the stock tanks. The partially stripped fat oil passes through a preheater to the secondary still where the remaining gasoline is recovered.



Burners for Scotch marine-type boiler designed by Sinclair's engineers and made from 2-in. tubing and jet tips

While water is available in East White Point field, it is not suitable for use in the plant and a 6-in. water line was laid across Nueces Bay to the city of Corpus Christi. Gasoline from the plant is likewise shipped by pipe line to Corpus Christi where it can be loaded on tankers.

Just north of the auxiliary building and outside of the main rectangle, tanks for the storage and treating of the water, and for storing pressure oil and absorption oil are located. These include one 5,000-bbl. steel tank for water storage, one 1,000-bbl. open wooden tank for engine circulating water, one 6 by 30-ft. steel tank for pressure oil, one 6 by 30-ft. tank for standpipe for furnishing water to the buildings in the plant, two 6 by 35-ft. steel tanks for storing engine oil and absorption oil, and two 1,000-bbl. tanks for treating the boiler-feed water.



A 1,000-bbl. wooden tank is used for the engine circulating water; at the left is a 5,000-bbl. steel tank for water storage and at the right are the vertical tanks for pressure oil, engine oil, and absorption oil and water for the buildings

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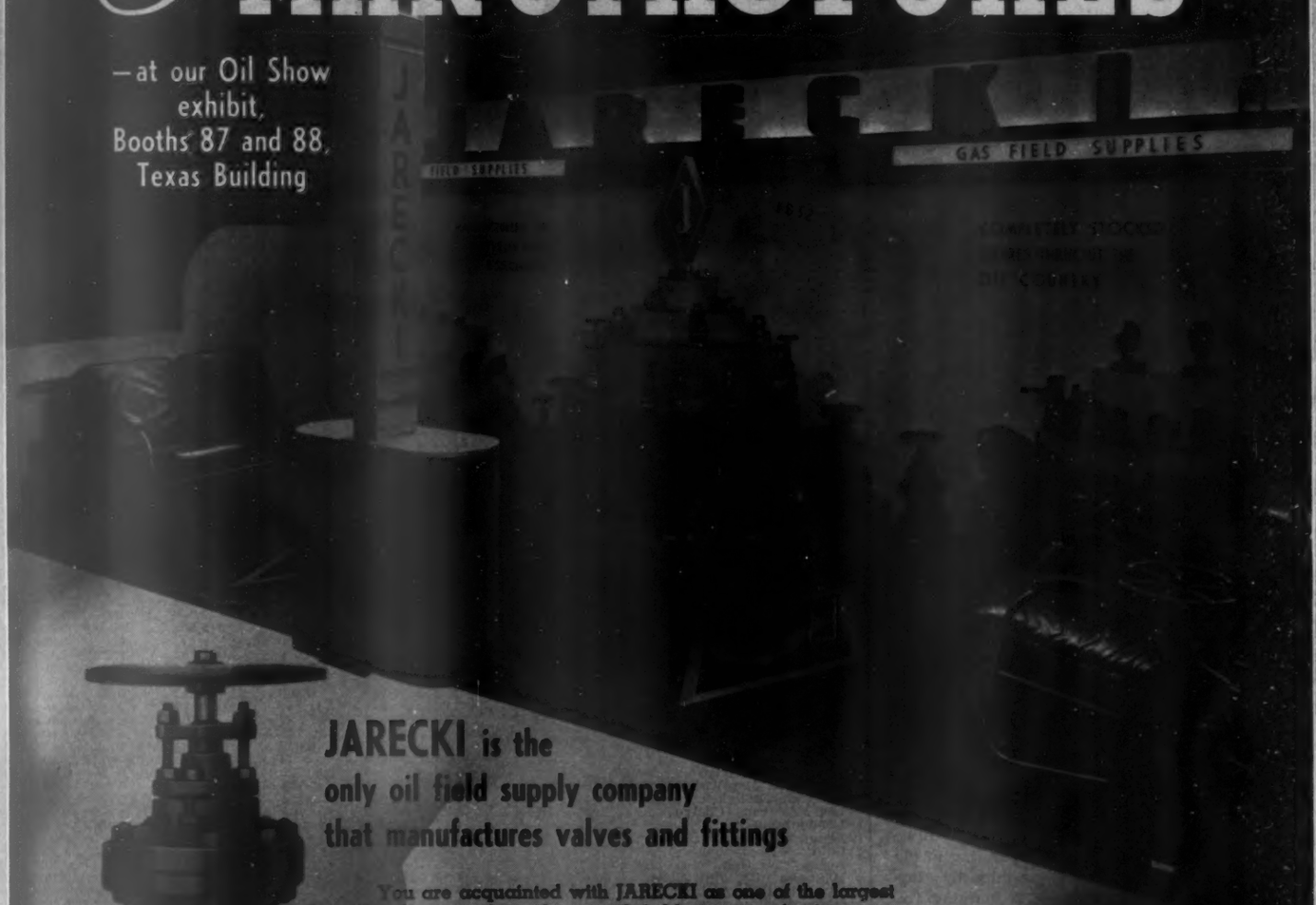

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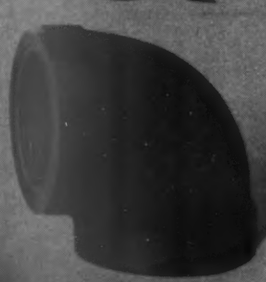

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Year Looms as One of Best in History of Gulf Coast

(Continued from Page 73)

ft. Eighteen of this number are located in coastal Louisiana and the balance in the upper Texas coast. The ease with which 10,000 and 12,000-ft. holes are now being drilled is a compliment to the manufacturers who are constantly providing larger rigs and other improvements in drilling equipment which has greatly reduced the hazards of deeper exploration. As the result of this deep-drilling program, the reserves of the Gulf Coast have been increased considerably, and production from even greater depths can be expected to be uncovered in the future.

Large-scale deep-drilling programs are under way at the Anchor field and Old Ocean fields in Brazoria County, where 12 rigs are being used in developing 10,000-ft. horizons. A new drilling record for the Texas coast was recently established at the Chocolate Bayou field when two wells were drilled below 11,000 ft., and production tests were being made at both wells.

Drilling Activity Being Maintained

Although proration restrictions on the Texas coast has greatly reduced the per-well allowable, drilling activity throughout the district is being maintained at about the same level as last year. At the close of March, 432 rigs were running. Of this total, 135 were in the upper Texas coast, 140 in the lower Texas coast and 157 in coastal Louisiana.

New sand discoveries and important extensions have resulted in large-scale drilling programs in several fields along the Texas coast. The most active field in the upper Texas coast is the West Ranch field, Jackson County, which looms as one of the largest reserves on the Gulf Coast. Uniform multiple-sand conditions at three horizons has extended production over several thousand acres and the structure is still undefined in several directions. Approximately 13 rigs are operating in the field with the development being done by Magnolia Petroleum Co., Humble Oil & Refining Co., Stanolind Oil & Gas Co., and several independent companies. Development of the proven area is expected to extend over several months.

Concentrated drilling programs in the McCampbell field, Aransas and San Patricio counties, the East White Point field in San Patricio and Nueces counties, extensions and new sand discoveries, have resulted in a steady drilling program in the lower Gulf Coast district. Approximately 15 rigs are operating at McCampbell and 12 at East White Point. There were 13 fields opened in this territory the past year and several are undeveloped with additional development expected to be started in the near future. A new sand discovery at the Wade City gas field converted this field into an oil field, and recent developments indicate that drilling will continue over a period of several months.

Wildcatting throughout the district remains active with more than 50 tests drilling. There are several types of plays which are being watched. They include the Sparta-Wilcox trend, extending over several hundred miles in a trend through the upper Texas Gulf Coast counties, the northern tier of parishes in coastal Louisiana and southwesterly along the old Jackson shore-line trend in South Texas. There are approximately 16 wildcat drilling along the trend and this number is expected to be increased in view of recent developments. The search for Vicksburg production around the

(Continued on Opposite Page)

Summary of Oper ati
And Louisiana Gu

THE following tabular report on the Gulf Coast fields in Texas and Louisiana will be found extremely valuable for reference. It gives the names of all the pools, year of discovery, number of producing wells in each pool, daily average production, accumulated production by pools, number of active operations and production depths in each pool.

LOWER TEXAS GULF COAST

Field and county—	Discovery year	Number producing wells Mar. 23	Daily average production Mar. 23	Accumulated production	Active operations	Present production depth
Agua Dulce and N. Agua Dulce, Nueces	12-28	86	1,975	711,127	4	4,800-4,900
Alfred, Jim Wells	2-38	3	21	44,716	0	3,200-3,300
Angelita, San Patricio	4-34	2	S.I.	38,507	0	5,300
Baldwin, Nueces	7-35	8	290	679,150	0	3,800-4,000
Banderia, Jim Wells	2-38	1	8	1,499	0	6,400
Benavides, Duval	4-37	260	7,435	7,305,811	0	3,800-5,300
Ben Bolt, Jim Wells	5-39	34	2,100	98,102	3	5,200-5,300
Bentonville-Richard King, Nueces	4-32	38	1,184	760,300	1	3,800-6,100
Bird Island, Kleberg	11-38	2	60	(*)	0	7,200
Blucher, Jim Wells	1-39	1	20	distillate-gas	0	7,500
Bonnieview, Refugio	12-38	1	.	4,855	0	5,200
Caesar, Bee	5-34	18	109	1,047,481	0	3,000
Camada, Jim Wells	4-39	1	4	2,290	0	5,600
Chapman ranch, Nueces	3-37	2	S.I.	44,597	0	5,000-6,000
Chiltipin, Duval	6-39	3	29	4,621	1	4,700
Clara Driscoll and S. Clara Driscoll, Nueces	11-35	97	2,445	2,163,138	5	3,800-6,500
Coleto Creek, Victoria	6-33	19	285	1,025,518	0	2,200-4,400
Cologne, Victoria	9-39	1	S.I.	1,182	1	2,800
Dirks, Bee	12-34	93	1,519	4,580,873	0	3,800-3,900
East Mathis, San Patricio	6-39	1	S.I.	750	0	4,400-5,200
East Premont, Jim Wells	12-37	6	239	122,764	1	5,400-6,500
East Telferner, Victoria	11-37	2	10	40,436	0	5,100
East White Point, San Patricio	2-38	183	11,840	2,315,588	11	5,600
Fagan, Refugio	2-40	1	50	.....	1	5,800
Fitzsimmons, Duval	5-38	78	2,619	1,041,582	0	3,500-4,200
Flour Bluff, Nueces	7-36	112	3,927	4,737,916	1	6,600
Foley, Bee	2-35	4	18	40,292	0	4,000-4,200
Greta, Refugio	5-33	204	4,200	22,531,693	0	3,500-6,200
Heyser, Calhoun-Victoria	5-36	241	11,147	8,046,582	2	5,400-6,000
Hordes Creek, Goliad	12-29	2	37	45,295	0	4,500
Keeran, Victoria	1-32	21	715	1,193,075	0	4,800-6,000
Kelsey, Jim Hogg-Brooks-Starr	8-38	58	2,050	313,864	3	4,600-6,000
Kingsville, Nueces	-20	9	44	129,524	0	2,100-3,200
La Blanca, Hidalgo	10-36	8	320	400,168	0	6,600-7,800
La Gloria, Jim Wells	3-39	4	128	8,319	0	6,500-7,300
La Rosa, Refugio	8-38	74	5,124	929,870	5	5,400-6,300
Las Mestenas, Hidalgo	8-35	2	108	56,270	0	6,700
London, Nueces	1-37	2	29	55,874	0	4,900
Longhorn, Duval	12-38	41	1,885	435,284	1	4,800
Luby, Nueces	6-37	141	5,347	4,011,152	0	4,300-5,000
Lucas, Live Oak	1-23	7	52	288,792	0	2,500-3,500
Magnolia City, Jim Wells	4-39	7	309	17,022	2	5,400-5,700
McAllen, Hidalgo	8-38	1	5	6,346	0	5,900
McCampbell, Aransas-San Patricio	7-36	265	9,745	5,548,674	15	6,500-7,300
McFaddin, Victoria	6-30	49	1,924	1,618,796	1	4,400
McNeil, Live Oak	9-34	4	66	238,697	0	4,300
Melon Creek, Refugio	2-39	10	310	97,691	0	5,800
Mercedes, Hidalgo	4-35	5	S.I.	181,102	0	7,400-7,500
Midway, San Patricio	4-37	13	435	536,408	1	5,300
Minnie Bock, Nueces	6-39	28	1,459	103,410	3	3,800
Muralla, Duval	5-39	2	58	8,288	1	4,700
Normanna, Bee	12-29	4	50	45,614	0	3,600
North Keeran, Victoria	12-39	1	19	.....	0	5,500
North Luby, Nueces	4-39	3	32	9,879	0	4,300-5,000
North McFaddin, Victoria	10-37	1	15	20,544	0	4,500
North Pettus, Bee	4-30	65	1,097	3,366,012	0	3,600
Oconnor, Refugio	12-31	4	79	512,942	0	3,100-4,100
Oakville, Live Oak	-28	16	468	126,095	0	2,700-2,800
Pettus, Bee	4-29	29	474	2,172,701	1	3,600
Placedo and E. Placedo, Victoria	4-35	170	5,630	9,896,837	1	4,700-6,300
Plummer, Bee	8-35	10	124	216,698	0	3,000
Plymouth, San Patricio	4-35	181	12,490	17,554,884	1	5,500-5,900
Port Lavaca, Calhoun	11-34	1	1	563,710	0	6,100-6,200
Premont, Jim Wells	4-33	32	297	167,902	2	2,200-3,200
Ray, Bee	3-35	11	219	1,470,885	0	3,900
Refugio, Refugio	9-20	161	5,830	39,499,348	1	3,600-6,600
Reynolds, Jim Wells	6-39	29	1,245	117,513	2	4,800-5,100
Rincon, Starr	2-38	9	214	24,321	3	3,200-4,600
Riverside, Nueces	12-38	3	140	29,929	0	4,800
Robstown, Nueces	8-39	1	67	6,905	0	5,500
Sandia, Jim Wells	11-29	3	6	18,142	0	4,100-5,100
Sarco, Goliad	1-38	1	S.I.	973	0	5,000
Saxet, Nueces	1-23	550	15,190	31,579,165	1	3,100-7,200
Sinton, San Patricio	4-34	1	6	92,347	0	5,400-5,900
Saxet Heights, Nueces	11-35	110	839	6,768,102	0	4,000
Slick, Goliad	12-30	1	8	24,894	0	4,200-4,400
South Alfred, Jim Wells	4-39	4	159	43,037	0	4,600
South Alice and East Alice, Jim Wells	4-38	111	5,520	1,724,326	2	4,800-5,300
South Burnell, Karnes	7-37	32	654	686,122	0	3,600
Stratton, Nueces	12-31	10	200	386,526	2	4,800-6,000
Straunch, Bee	3-37	2	8	13,084	0	4,200
Taft, San Patricio	12-35	70	3,900	3,371,495	0	3,900-4,900
Tomoconnor, Refugio	6-34	410	19,587	15,069,210	1	5,500-5,900
Tuleta-West, Bee	6-34	19	242	1,851,626	0	3,900
Tulsita, Bee	10-38	2	18	3,560	0	3,600
Victoria, Victoria	8-39	5	100	122	4	2,500-3,000
Voss, Bee	6-36	2	15	104,062	0	4,000
Sun, Starr	9-38	18	619	151,232	2	4,100-4,500
Wade City, Jim Wells	6-39	3	16	3,128	4	4,800-4,900
Weslaco, Hidalgo	2-38	1	S.I.	S.I.	0	8,600
West Saxet, Nueces	11-37	60	6,110	2,162,593	0	3,800-5,900
White Creek, Live Oak	2-39	10	185	28,607	1	1,300
White Point, San Patricio†	5-38	2	35	85,660	0	4,900-5,600

*Included with Flour Bluff. †First oil production

ations in Texas Gulf Coast

UPPER TEXAS GULF COAST

Field and county—	Discovery year	Number producing wells Mar. 23	Daily average production Mar. 23	Accumulated production	Active operations	Present production depth
Ace, Polk	12-33	6	345	201,821	0	4,800-7,700
Aldine, Harris	5-39	1	60	9,643	0	6,800
Allen, Brazoria	5-27	1	3	91,041	0	4,300-5,500
Amelia, Jefferson	2-36	115	3,300	4,475,439	0	6,700
Anahuac, Chambers	3-35	304	9,212	12,736,664	3	6,900-7,000
Angleton, Brazoria	9-39	4	672	12,726	6	10,460-10,467
Ariola, Hardin	9-32	10	202	1,874,488	0	3,000-4,700
Armour, Matagorda	2-38	4	173	96,916	0	6,600-7,200
Bammel, Harris	3-37	7	287	107,806	0	6,100-6,200
Barbers Hill, Chambers	4-16	161	9,204	67,750,494	1	3,400-6,700
Batson, Hardin	10-30	218	1,420	39,235,962	0	1,100-3,600-3,700
Bay City, Matagorda	3-36	23	3,219	1,648,306	2	8,100-9,300
Big Creek, Fort Bend	5-22	27	376	9,678,283	0	2,600-4,500
Blue Ridge, Fort Bend	4-19	47	610	11,086,352	0	1,900-4,600
Boling, Fort Bend-Wharton	12-25	91	1,586	6,748,060	0	2,500-4,800
Brenham, Washington	10-15	24	35	282,698	0	220-1,500
Brookshire, Waller	9-34	1	....	23,009	0	2,900
Buckeye-Wilson Creek, Matagorda	9-32	3	199	784,929	1	7,800-9,900
Buttermilk Slough, Matagorda	8-39	1	22	2,851	0	7,800
Caplen, Galveston	3-39	6	300	40,284	2	7,200-7,400
Cedar Point, Chambers	2-38	15	1,278	346,779	1	4,000-6,000
Cheek, Jefferson	1-38	3	S.I.	70,135	0	7,700
Chocolate Bayou, Brazoria	10-39	1	34	1,741	0	9,800
Clam Lake, Jefferson	12-37	7	154	88,787	1	2,300-5,900
Clay Creek, Washington	10-28	54	410	4,330,201	0	1,000-1,500
Clear Lake, Harris	4-38	29	1,020	172,730	2	5,800-5,900
Cleveland, Liberty	12-33	11	226	1,174,652	0	5,700-9,100
Clinton, Harris	10-36	8	160	192,841	0	3,200-4,000-8,100
Conroe, Montgomery	12-31	935	28,194	107,424,482	0	5,000-5,200
Cordele, Jackson	3-38	44	2,660	763,380	0	2,600-2,700
Cotton Lake—South, Chambers	8-36	51	1,862	1,558,246	1	6,400-6,500
Damon Mound, Brazoria	11-15	36	354	9,137,739	0	1,400-3,700
Danbury, Brazoria	9-37	11	309	288,904	1	1,500-2,700
Dickinson, Galveston	8-34	214	10,912	9,342,825	3	7,800-9,300
Edna, Jackson	12-21	6	6	4,044	0	3,200-5,300
Esperson, Liberty	8-29	51	1,827	5,803,901	2	2,200-7,300
Eureka, Harris	11-34	36	2,915	1,323,630	0	7,600-8,000
Fairbanks, Harris	1-38	275	8,076	3,389,004	3	6,800-7,200
Fannett, Jefferson	1-27	21	347	2,624,695	1	3,200-8,300
Francitas, Jackson	11-38	6	289	66,587	0	7,300-7,900
Friendswood, Harris	7-37	205	9,176	3,424,904	2	5,700-6,050
Ganado, Jackson	4-37	6	90	36,855	0	5,080-5,100
Garwood, Colorado	7-32	2	S.I.	7,988	0	6,000-6,200
Goose Creek, Harris	1906	87	1,700	75,104,035	0	1,200-4,650
Greens Lake, Galveston	6-36	2	20	45,246	1	2,700-6,800
Hankamer, Liberty	6-29	36	895	5,333,833	0	2,500-4,900
Hardin, Liberty	7-35	146	5,360	2,614,114	3	7,500-7,700
Hastings, Brazoria-Galveston	12-34	672	17,120	22,260,911	2	5,100-6,100
High Island, Galveston	10-22	62	2,527	15,998,109	0	3,600-6,700
Hilje, Wharton	9-39	2	50	1,370	0	5,200
Hitchcock, Galveston	9-37	13	690	531,026	0	5,130-5,150
Hull, Liberty	7-18	175	6,000	89,627,032	0	1,400-5,800
Humble, Harris	1-05	259	3,287	123,458,314	1	700-6,500
Kittrell, Houston	9-34	16	387	1,527,905	0	1,900-2,100
La Belle, Jefferson	1-37	3	64	397,234	1	8,200-8,600
League City, Galveston	10-38	24	2,178	143,120	1	8,600-10,000
Livingston, Polk	10-32	86	1,976	5,449,417	0	4,100-4,300
Lochridge, Brazoria	11-36	43	2,658	1,654,474	1	6,300-6,350
Lost Lake, Chambers	8-29	8	118	998,429	0	2,700-2,850
Louise, Wharton	12-33	41	1,122	2,695,399	0	5,100-7,100
Lovell Lake, Jefferson	11-38	46	2,487	287,380	3	7,700-7,800
Magnet, Wharton	9-36	49	1,438	783,944	1	5,500
Manvel, Brazoria	9-31	172	9,175	16,597,831	1	3,800-5,700
Markham, Matagorda	1-08	45	1,352	5,120,228	1	2,300-4,300
Martha, Liberty	6-39	5	230	24,365	1	8,100
Mauritz, Jackson	6-35	4	304	208,684	1	5,600
Mykawa, Harris	8-29	30	1,132	3,930,481	0	4,100-4,900
Nome, Jefferson	7-36	43	854	1,528,954	0	6,000-6,100
North Dayton, Liberty	9-05	8	80	2,343,632	0	450-5,100
North Markham, Matagorda	9-38	2	108	47,488	0	7,700-7,750
Old Ocean, Brazoria	11-34	48	11,727	5,618,142	6	8,600-10,600
Orange, Orange	8-13	84	2,489	34,396,184	1	2,500-6,100
Orchard, Fort Bend	1-26	15	206	3,642,088	1	2,600-7,800
Palacios, Matagorda	3-37	3	59	136,364	0	7,800-9,300
Picketts Ridge-Kubela, Wharton	7-35	55	2,232	2,503,509	1	4,500-4,700
Pierce Junction, Harris	2-21	73	2,490	33,810,501	1	3,100-5,500
Port Neches, Orange	5-29	22	1,028	5,197,835	1	3,100-5,900
Raccoon Bend, Austin	1-28	186	4,452	21,535,571	0	3,100-4,100
Rosenberg, Fort Bend	9-39	2	35	7,998	1	7,700
Sandy Point, Brazoria	1-37	1	22	218,087	0	6,500
Saratoga, Hardin	1901	235	776	28,709,306	1	550-3,300
Satsuma, Harris	6-36	12	440	397,178	0	6,800
Seabreeze, Chambers	11-36	18	457	364,434	3	8,200-8,800
Segno, Polk	12-36	39	1,165	2,033,296	3	4,700-8,000
Silsbee, Hardin	8-36	46	1,138	1,564,208	1	6,900
Sour Lake, Hardin	7-02	142	1,387	78,320,910	0	525-4,400
South China, Jefferson	6-39	7	246	15,182	3	7,600-7,800
South Houston, Harris	6-35	94	2,070	5,258,892	0	3,800-4,800
South Liberty, Liberty	1-25	40	575	15,128,122	0	2,000-4,900
Spindletop, Jefferson	1-01	143	2,005	126,724,991	0	2,500-5,800
Spurger (Joe's Lake), Tyler	5-37	33	1,794	755,139	2	7,600-7,700
Sugarland, Fort Bend	3-28	51	4,927	28,279,135	1	2,900-3,900
Texana, Jackson	8-39	1	S.I.	1,167	0	5,700
Thompson, Fort Bend	5-31	297	13,287	34,284,564	4	3,000-7,900
Tomball, Harris	5-33	429	6,104	13,872,067	2	5,500-5,600
Turtle Bay, Chambers	12-35	36	901	1,231,166	1	6,500-6,600
Vanderbilt, Jackson	5-34	1	25	167,220	0	5,500
Van Vleck, Matagorda	3-34	39	3,800	2,726,633	1	7,000-8,200
West, Jackson	8-38	83	2,470	230,114	12	5,100-5,700
West Beaumont, Jefferson	3-36	51	3,154	1,862,188	1	4,500-6,700
West Columbia, Brazoria	7-15	111	7,048	82,956,196	3	2,600-5,900
Withers, Wharton	1-36	174	5,963	3,023,050	4	5,500

(Continued on Next Page)

flanks of several old fields and prospects in Fort Bend and Wharton counties have resulted in a number of tests being drilled. An incentive for this type of play followed the opening of prolific production on the north flank of the old Thompson field. Several wildcats were recently started in Brazoria and Galveston counties in search of production in the basal Frio formation originally opened at 10,000 ft. at the C!d Ocean field, and more recently in the Anchor and Chocolate Bayou fields in Brazoria County.

The search for Cockfield production through the eastern half of Duval County continues active, while no letup in exploration is anticipated for the Frio-Vicksburg trend extending southwestwardly through Jim Wells County as far south as Starr County. One of the most interesting plays on the lower Gulf Coast is that which is taking place in the Rio Grande Valley area, including such counties as Brooks, Kenedy, Willacy, Kleberg, and Cameron. While exploration at present is limited to a few wells, it is the first time in several months that any attempt has been made to exploit this immense area of virgin territory. This area has been under lease for several years, and geophysical activity is said to have indicated several promising prospects.

For the week ended March 24 there were 13,521 producing wells in the three divisions of the Gulf Coast. They include 7,758 wells in the upper Texas coast, 3,935 wells in the lower Texas area and 1,828 wells in coastal Louisiana. Daily average production from these fields as of that date was 622,265 bbl.

TABLE 1—DISCOVERIES OF GULF COAST FIELDS BY YEARS

Year—	Louisiana coast	Upper Texas coast	Lower Gulf Coast	Total Gulf Coast fields
1901-24	9	24	1	34
1925	0	1	1	2
1926	2	2	1	5
1927	3	3	0	6
1928	3	3	2	8
1929	8	7	0	15
1930	1	1	13	15
1931	5	3	5	13
1932	2	6	3	11
1933	0	5	3	8
1934	6	10	8	24
1935	5	8	15	28
1936	6	17	15	38
1937	1	3	4	8
1938	20	12	21	53
1939	18	13	13	44
Total	89	118	105	312

A recent survey of producing fields in the district shows that 38 fields have produced in excess of 10,000,000 bbl. each up to January 1, 1940. Of these 20 had produced more than 25,000,000:

UPPER TEXAS COAST

Field—	Accumulated production Jan. 1, 1940	Daily average production March 24
Anahuac	12,736,664	9,170
Barbers Hill	67,750,494	9,198
Batson	39,235,962	1,537
Blue Ridge	11,086,352	760
Conroe	107,424,482	28,214
Goose Creek	75,104,035	1,652
Humble	123,458,314	3,300
Hull	89,627,032	9,206
Orange	34,396,184	2,483
Pierce Junction	33,810,501	2,510
Raccoon Bend	21,535,571	4,466
Saratoga	28,709,306	806
Sour Lake	78,320,910	1,440
Spindletop	126,724,991	2,009
Sugarland	28,279,135	4,911
Thompson	34,284,564	14,528
West Columbia	82,956,196	7,060

LOWER TEXAS COAST

Greta	22,531,693	4,198
Plymouth	17,554,884	12,493
Refugio	39,499,348	5,852
Saxet	31,579,165	15,187
Tomoconnor	15,069,210	19,590

COASTAL LOUISIANA

Bosco	20,643,650	4,554
Caillou Island	26,596,092	7,704
East Hackberry	22,132,022	4,628
Evangeline	65,054,109	16,296
Iowa	39,252,777	10,786
Lafitte	17,733,610	10,516
Leeville	21,254,727	2,951
Sulphur	13,973,665	1,704
Vinton	44,939,058	936

Deep Drilling Develops New, Improves Old, Practices

(Continued from Page 162)

conditioning and this matter is, and probably will always be, the most pressing operating problem. The depth limit is determined more by the difficulties encountered in handling the mud than it is by development of machinery to handle the drill pipe. The pressures required of the pumps are in many cases very high, due to the condition of the mud more than to the depth at which drilling is progressing.

The problem is extremely complicated as in many areas the mud must not only be conditioned so it can carry the cuttings from the hole, but it must also counteract caving formations, loss of mud into the formation, prevent blowouts and still remain in a pumpable condition. Some of these qualities are directly opposed to each other and while curing one trouble, another may develop. In many cases this led to long delay in drilling a well; and failure to complete or bad blowouts are often attributed to this cause. In addition, heaving shales and hot salt-water flows may be encountered, further complicating the problem. The heaving shale difficulty has been counteracted by mud which has no water loss.

The importance of mud conditioning has led oil companies and some drilling contractors to employ mud engineers to supervise the treatment of the drilling fluid. The drillers are thus relieved of this responsibility and can devote their entire time to drilling. Hourly checks are made of the weight, viscosity, sand content pH and gel strength of the mud and the treatment prescribed by the engineer. Native mud is generally suitable for the upper part of the hole and as a base for the chemicals and conditioning materials which are required. Large amounts of Aquagel, Baroid, Jelox, Colox and locally ground clays are required to obtain the proper weight, viscosity and gel strength. Chemicals used to aid in controlling the properties of the mud include caustic soda (sodium hydroxide), sodium carbonate, sodium sesquicarbonate, sodium bicarbonate, sodium tetraphosphate, tetrasodium pyrophosphate, sodium hexametaphosphate, sodium silicate (water glass) and tannic acid (quebracho and chestnut extracts).

The chemicals are mixed in barrels and then allowed to trickle in the mud stream while the ground-conditioning material is generally added through a jet-type mixer. Where serious trouble is encountered, a special pit is erected for mixing the Aquagel, Baroid, etc. If the mud engineer is in charge, the drilling crews generally mix small portions of mud to see what the results obtained will be when certain amounts of conditioning material or chemicals are added.

The mud problem is one where a few precautions will prevent serious trouble which can only be cured at great expense. Weight and viscosity of the mud must be kept within a narrow range in many fields, as a variation of 0.2 lb. per gal. and 2 seconds in viscosity is often enough to develop serious trouble. In one field, it has been possible to cut the mud bill 75 per cent by simply maintaining close supervision of the condition of the drilling fluid.

Importance of the mud problem has led to revamping of the mud systems. Formerly large pits were used but recently it has been found that a small amount of mud, properly conditioned, is superior to a large quantity of poorly conditioned fluid. One operator in a 10,000-ft. field is using three 125-bbl. tanks instead of the conventional pits; the reserve pit is made large so an adequate supply of base mud is available in case trouble develops which will require a large amount of mud. In addition to the vibrating screens, which are standard equipment on all rigs, many rigs are equipped with degassers for eliminating the gas entrained in the mud.

Style of Working

At the present time there is a tendency in deep drilling to revamp part of the drilling setup which affects the work of pipe racker and the derrick man. In the past, the Mid-Continent method has been used for racking the pipe, but in recent months the California system has been introduced and is finding favor on many rigs. The latter method (described as "racking behind a finger") was in vogue in the Mid-Continent 20 years ago but was abandoned in favor of racking the pipe in front of the drum which is easier for the pipe racker but places a greater burden on the derrick man. In the California method, the bottom of the pipe is placed at the right side of the derrick, the upper end being supported by steel fingers. When going in the hole the blocks are swung only a trifle in comparison to the long Mid-Continent swing.

Summary of Operations—Continued

COASTAL LOUISIANA

Field and county—	year Discovery	Number producing wells Mar. 23	Daily average production Mar. 23	Accumulated production	Actibe operations	Present production depth
Abbeville, Vermilion	4-37	5	493	379,747	2	6,400-10,500
Anse Le Butte, St. Martin	1902	11	275	968,629	3	825- 4,650
Bancroft, Beauregard	5-38	37	3,046	957,801	2	7,200- 7,300
Barataria, Jefferson	11-39	2	495	14,761	3	8,200-
Bateman Lake, St. Mary	12-37	5	847	385,468	2	8,600-10,900
Bay Baptiste, Terrebonne	8-37	1	S.I.	1,305	0	11,172-11,178
Bayou Blue, Iberville	9-29	1	185	95,127	2	1,700- 5,200
Bayou Bouillion, St. Martin	7-28	2	25	459,678	0	2,800- 4,300
Bayou Des Allemonds, St. Charles	8-37	4	371	124,315	0	6,800- 9,400
Bayou Mallet, Acadia	1-36	5	224	258,256	0	6,300- 7,000
Bay St. Elaine, Terrebonne	3-34	5	297	165,318	1	2,700- 6,800
Black Bayou, Cameron	4-29	19	2,838	7,183,477	1	3,800- 6,600
Bosco-Cankton, Acadia	4-34	51	4,622	20,643,650	0	5,300- 9,100
Caillou Island, Terrebonne	1-30	39	7,428	26,596,092	2	3,200- 6,900
Cameron Meadows, Cameron	1-31	32	1,732	7,092,197	1	3,200- 5,200
Chacahoula, La Fourche	9-38	5	1,188	403,859	2	7,200-
Chalkley, Cameron	11-38	11	1,787	220,878	3	8,600- 8,900
Charenton, St. Mary	9-36	147	9,719	3,794,259	3	1,000- 7,200
Cheneyville, Rapides	11-35	19	2,808	785,976	2	5,700- 6,200
Choctaw, Iberville-West Baton Rouge	6-31	7	900	2,647,320	1	2,400- 8,500
Creole, Cameron	3-38	9	2,193	715,532	1	5,100- 6,900
Darrow, Ascension	9-32	14	2,327	3,201,973	1	4,000- 8,200
De Large, Terrebonne	7-37	1	210	43,769	0	13,254-13,266
Dog Lake, Terrebonne	5-29	7	827	1,697,744	1	6,800- 7,300
East Hackberry, Cameron	11-27	51	4,636	22,132,022	1	2,500- 7,000
Edgerly, Calcasieu	1912	15	234	9,458,352	1	2,500- 4,200
Eola, Avoyelles	1-39	57	10,198	965,291	10	8,300- 8,500
Evangeline, Acadia	8-01	146	16,308	65,054,109	5	1,500- 8,200
Fausse Point, Iberia	2-27	1	24	15,630	2	1,100- 7,900
Garden Island, Plaquemines	9-35	18	2,890	2,472,865	2	4,000- 6,800
Gibson, Terrebonne	2-37	13	3,815	2,546,046	1	8,600- 9,400
Gillis, Calcasieu	10-34	46	4,880	18,316,521	2	5,200- 7,500
Golden Meadow, La Fourche	12-38	62	8,692	694,937	8	2,300-10,388
Grand Bay, Plaquemines	7-38	8	2,065	544,919	4	6,100- 8,700
Grand Lake, Cameron	5-39	8	2,197	140,421	2	6,700- 8,300
Gueydan, Vermilion	4-32	5	418	1,046,208	0	3,500- 4,300
Happytown, Iberville	11-39	1	325	12,756	1	9,700- 9,758
Hester, St. James	8-38	1	69	35,741	0	6,300- 8,000
Horseshoe Bayou, St. Mary	8-37	5	1,087	598,348	1	10,800-11,804
Iowa, Jeff Davis	1-31	40	10,074	39,252,777	0	4,400- 7,000
Jeanerette, St. Mary	12-35	22	3,747	7,463,179	0	6,600-10,400
Jefferson Lake, Iberia	6-38	4	747	164,713	2	7,800- 8,100
Kenilworth, St. Bernard	5-39	1	197	2,611	0	10,600-
Lafitte, Jefferson	5-35	38	10,364	17,733,610	3	8,000-10,200
Lafourche Crossing, La Fourche	9-39	1	323	38,279	2	10,100-
Lake Barre, Terrebonne	9-29	22	805	17,603,659	0	3,600- 6,100
Lake Hermitage, Plaquemines	5-34	1	24	107,635	1	3,100- 8,700
Lake Long, La Fourche	6-37	7	1,574	789,910	0	9,300-10,400
Lake Mongoulol, St. Martin	12-38	1	S.I.	3,161	1	8,900- 9,700
Lake Pelto, Terrebonne	7-29	12	1,538	1,535,075	1	5,400- 6,600
Lake Washington, Plaquemines	6-31	7	530	2,653,471	0	1,100- 6,300
La Pice, St. James	6-39	1	67	5,437	0	10,910-10,915
La Place, St. James	12-39	1	108	5,083	1	8,115- 8,122
Leeville, La Fourche	2-31	87	2,984	21,254,727	0	2,900- 8,400
Lirette, Terrebonne	5-37	2	S.I.	29,887	0	8,300-10,400
Lockport, Cameron	9-24	19	775	15,206,918	0	2,200- 6,900
New Iberia, Iberia	1917	67	10,585	18,350,639	7	2,300- 9,000
North Crowley, Acadia	9-37	22	3,565	1,213,405	2	7,100- 8,700
Northeast Tepetate, Acadia	10-38	2	105	67,280	0	7,900- 9,000
North Elton, Jeff Davis	6-39	1	S.I.	3,705	1	7,200- 7,400
Paradis, St. Charles	6-39	2	395	19,392	2	9,800-10,300
Plumb Bob, St. Martin	9-39	1	278	20,827	1	8,500- 8,590
Potash, Plaquemines	9-37	3	484	128,603	1	688- 8,200
Port Barre, St. Landry	2-29	30	2,084	8,111,345	3	3,100- 6,000
Quarantine Bay, Plaquemines	11-37	17	4,105	1,154,855	2	8,100- 8,500
Raceland, La Fourche	1-38	4	934	757,248	1	7,100-10,200
Roanoke, Jeff Davis	5-34	17	2,134	8,244,903	0	7,500- 8,700
Sorrento, Ascension	2-28	6	220	1,022,183	1	1,600- 5,700
South Elton, Jeff Davis	8-37	1	70	19,941	0	9,100
South Houma, Terrebonne	11-38	2	548	158,446	0	10,300
South Jennings, Jeff Davis	11-36	3	194	37,433	3	8,600
South Roanoke, Jeff Davis	4-37	6	1,286	354,141	1	8,500-10,000
Starks, Calcasieu	2-27	22	415	2,913,497	1	800- 4,300
St. Martinsville, St. Martin	11-35	2	463	1,009,186	0	5,500
Sulphur, Calcasieu	12-26	50	2,826	13,973,665	3	2,600- 5,100
Sweet Lake, Cameron	1927	7	924	4,149,203	1	4,400- 7,300
Tepetate, Acadia	8-35	51	4,809	6,467,525	0	8,300- 9,100
Timbalier Bay, La Fourche	1-38	2	227	90,155	0	6,950
University, East Baton Rouge	3-38	64	9,790	1,612,184	4	6,400
Valentine, La Fourche	12-36	22	2,687	3,793,902	1	3,700- 9,200
Venice, Plaquemines	7-37	11	1,972	1,205,881	1	7,100-10,000
West Gueydan, Vermilion	7-38	5	805	153,405	1	6,600- 6,900
West Hackberry, Cameron	10-28	53	3,594	7,419,272	4	2,900- 9,300
West Lake Verret, St. Mary	12-38	2	293	134,119	1	8,000
White Castle, Iberville	10-29	9	1,384	3,524,336	2	5,100- 8,900
Woodlawn, Jeff Davis	2-38	12	2,127	647,535	2	8,200- 9,800
Villa Platte, Evangeline	9-37	91	13,109	4,270,934	8	8,900-10,300
Vinton, Calcasieu	6-10	68	935	44,939,058	0	1,850- 3,950
Four Isle, Terrebonne	11-34	...	...	283,525	0	5,600
Big Lake, Cameron	12-35	...	...	73,903	0	7,900
Vermilion Bay, Iberia	7-39	1	324	56,415	1	10,131-10,239

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, TECHNICAL EDITOR

W. L. NELSON

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to W. L. Nelson, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists, and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible. Inquiries must be signed but only the given initials will be printed. The source of the question is considered to be confidential.

Questions requiring a discussion of patents, extended computations, or a detailed study cannot be considered. When the matter is of general interest, a reply will be published within a reasonable time.

Specifications for Stove Gasoline And Flash-Point Determination

I would appreciate knowing what should be the correct specifications of stove gasoline, as to end point, vapor pressure, distillation range, and any further information you might have on the subject. How would you determine the flash point of gasoline?—H. J. E.

Stove gasoline, stove oil, or light naphtha is a low-boiling-range gasoline suitable for use in pressure appliances such as lamps, stoves, hand torches, and lanterns which may be pumped up with air prior to use. This material is a straight-run product which is low in sulfur and gum so that the generating system cannot become plugged or corroded, and having a boiling range that is low enough to permit ignition by the application of a match. The distillation range must be low so that the generation of vapor will take place easily and uniformly at a somewhat low-generator temperature but the use of natural gasoline or similarly very low boiling-range materials is not permitted because of the fire hazard. In practical use, the housewife insists upon two performance characteristics—the liquid must ignite easily and it must burn with a clean blue flame. If these characteristics are satisfactory the customer is usually satisfied.

Specifications of stove gasoline are:

A.P.I. gravity	64-70 (depending on type of crude)
Color	30
Doctor	Negative
Corrosion	Negative
Gum (copper dish)	0.0 (1.0 max.)

Vapor pressure:	
Summer	6 lb. max.
Winter	7 lb. max.

	A.S.T.M.		
	Min.	Max.	Usual
I.B.P.	105	120	112
5 per cent			140
10 per cent	140	165	162
20 per cent	...	...	186
30 per cent			200
40 per cent			215
50 per cent	210	229	235
60 per cent	...	...	240
70 per cent			250
80 per cent	...	...	270
90 per cent	280	300	293
95 per cent	...	...	305
Dry			328
E.P.	325	350	335
Recovery, 98 per cent.			

Some refiners make a somewhat heavier product which has an end point of 370-380° F. because of the greater safety. Such a material is recommended for inside services, and the lighter naphtha specified above is recommended for outdoor services.

The flash point of these materials would be very low and of no significance because ready ignitability is a necessary requirement of the material. The flash point of somewhat heavier naphthas is usually determined by means of the regular "Tag" closed-cup tester.

So-Called Isooctane Processes

What is the charge stock used in isooctane plants?—F. P. M.

During 1936-39 several processes were developed which were referred to as isooctane processes. References to these processes as isooctane processes was unfortunate because it is inferred that the product from such plants is the same material (2,2,4 trimethylpentane) that is used in measuring the octane number of gasolines—or that the product of such plants is a 100 per cent perfect fuel from the standpoint of antiknock properties.

The processes referred to as isooctane processes all utilize the butene hydrocarbons that are found in cracking-still gases as the raw feedstock—or the butanes that are produced in natural-gasoline plants may be converted into butenes by thermal decomposition or catalysis.

The general steps that are involved in these processes are:

1. Dehydrogenation, thermally or by catalyst, of butane and isobutane into butene and isobutene.

2. Polymerization or combination of 2 butene molecules into octene by means of thermal polymerization or by use of catalysts.

3. Hydrogenation of octenes into octanes by means of a catalyst.

Thus, the product from the process is primarily a mixture of various 8 carbon-atom molecules (octane and isooctanes) as well as lesser amounts of both the larger and smaller molecules such as hexanes, heptanes, nonanes, etc., and this mixture is not pure isooctane nor does it have an octane number of 100. The first step, that of dehydrogenation, may be accomplished by heating to over 850° F. in a process similar in most respects to cracking; or a chromium oxide on alumina catalyst may be employed. Higher yields of butenes are obtained when using the catalyst and the temperature is lower. Step 2 may also be accomplished simply by heating, but the use of phosphoric acid catalysts results in a lower temperature, and the use of sulfuric acid as a catalyst permits polymerization at temperatures only a little higher than prevailing atmospheric temperatures. The final or third step which involves hydrogenation may be accomplished by the regular activated nickel, platinum, or palladium catalysts which have been used for many years. This is possible because the sulfur which is a poison to the catalyst can be removed from the stock at small expense.

More recently, processes have been developed (alkylation) by which isobutane and isobutene, or similar pairs of saturated and unsaturated molecules, can be combined together in a single operation using sulfuric acid as the catalyst or even by heating at extreme pressures. Such processes result in the direct formation of 8 carbon-atom molecules without the need of a hydrogenation operation and require only half as much of the unsaturated hydrocarbons (butenes) as required by the isooctane processes outlined above.

In reality, there is no reason to aim directly at the manufacture of 2,2,4 trimethylpentane (the particular isooctane used in measuring octane number) in commercial operations although such a process is a technical triumph and may have advertising merit.

References: Grosse, Ipatieff, Egloff, and Morrell, The Catalytic Dehydrogenation Process, The Oil and Gas Journal, p. 53, November 23, 1939. Oberfell and Frey, Thermal Alkylation of Neohexane, The Oil and Gas Journal, p. 50, November 23, 1939. Gard, Blout, and Korpi, Alkylation—Utilization of Natural Gasoline, The Oil and Gas Journal, p. 42, December 14, 1939, and p. 46, December 21, 1939. Shanley and Egloff, Midget Poly Units, The Oil and Gas Journal, p. 116, May 18, 1939.

Octane Number of Natural Gasoline And Cause of High Number

Will you please tell me to what specific properties the high-octane rating of natural gasoline is due? I have been told that the octane rating of the natural gasoline in the Rodessa field is low. Is this a fact?—J. E. W.

The octane numbers of the hydrocarbons that compose natural gasoline are higher, on an average, than those that are present in crude oil. In general, the lower the boiling point of the hydrocarbon, the higher the octane number. Thus, the octane numbers (motor method) of some of the hydrocarbons in natural gasoline are:

Butane	91
Pentane	64
Hexane	59
Isobutane	99
Isopentane	90

The amounts of these hydrocarbons in natural gasolines (of the same vapor pressure) are essentially the same, but the composition of the remaining or hexane-plus part of the gasoline differs greatly in different fields, and the octane number of the hexane-plus part of the gasoline is the main reason for the difference in octane number of various gasolines.

In the Rodessa field the hexane-plus part of the natural gasoline may partake of the low-octane number of the gasoline in Rodessa crude oil, thus giving a natural gasoline of somewhat lower octane number.

Bureau Report Shows Record Demand for Products

THE production of crude oil surpassed all previous records in February, when the daily average was 3,747,200 bbl., or nearly 100,000 bbl. above the January average, according to the Bureau of Mines.

Most of the states increased their output rate in February, the most notable exception being California's average which, however, remained above 600,000 bbl. Illinois passed the 400,000-bbl. mark in setting a new record of 404,400 bbl. daily. The Louisiana Gulf was another record breaker and the average for Louisiana rose from 271,500 bbl. in January to 281,400 bbl. in February. Despite the competition from Illinois, both Kansas and Oklahoma increased their output substantially.

Daily average crude runs to stills increased from 3,436,000 bbl. daily in January to 3,509,000 bbl. in February, but this was outweighed by the gain in output and a decline in exports, with the result that the rate at which crude oil was being added to storage increased. Thus in February nearly 5,000,000 bbl. was added to refinable crude stocks, compared with an increase of just under 1,000,000 bbl. in January.

The yield of gasoline continued to be influenced by the record-breaking heating-oil demand, and in February fell to 42.4 per cent, the lowest since January 1931 and a decline of 0.5 per cent from January. The yield of light fuel oil rose 0.5 per cent to 16.0 per cent, the highest ever reached. An indication that the heavy-fuel-oil market is easing is seen in the material decline in the residual fuel-oil yield in February.

The demand figures for motor fuel for February were similar to those of January in that the domestic demand exceeded expectations, but the total demand was lower than expected because of the low exports. The daily domestic demand in February was 1,295,000 bbl., or 5 per cent above a year ago. Exports were 1,903,000 bbl., or just about a million barrels below a year ago. In spite of the cut in yield, gasoline stocks continued to increase rapidly, finished stocks rising nearly 8,000,000 bbl. to 92,721,000 bbl. on February 29, unfinished stocks rising nearly a half million to 6,574,000 bbl.

The crude-oil capacity represented by the data in this report was 4,316,000 bbl., hence the operating ratio was 81 per cent, compared with 81 per cent in January and 76 per cent in February 1939.

United States Supply and Demand

Two months, 1940

Crude Oil (Bbl.)

2 MONTHS—	TOTAL SUPPLY	TOTAL DEMAND	EXCESS DEMAND	EXCESS PCT.	DOMESTIC PRODUCTION	IMPORTS	INDICATED DOMESTIC DEMAND‡	EXPORTS	STOCKS REFINABLE CRUDE FEB. 29
1940	226,101,000	220,516,000	*5,585,000	*2.5	221,808,000	4,293,000	212,987,000	7,529,000	‖244,417,000
Daily average	3,768,000	3,675,000	.....	....	3,697,000	72,000	3,550,000	125,000	.....
1939	199,431,000	199,682,000	251,000	0.1	195,965,000	3,466,000	190,395,000	9,287,000	273,416,000
Daily average	3,380,000	3,384,000	.....	....	3,321,000	59,000	3,227,000	157,000	.....
Increase, 1940	26,670,000	20,834,000	.....	....	25,843,000	827,000	22,592,000	†1,758,000	†28,999,000
	13.4%	10.4%	.....	...	13.2%	24.0%	11.9%	†18.9%	†10.6%

Refinery Products Motor Fuel (Bbl.)

2 MONTHS—	TOTAL SUPPLY	TOTAL DEMAND	EXCESS DEMAND	EXCESS PCT.	DOMESTIC PRODUCTION	IMPORTS	DOMESTIC DEMAND	EXPORTS	STOCKS FEB. 29§
1940	97,860,000	82,104,000	*15,756,000	*19.2	97,839,000	21,000	77,927,000	4,177,000	97,478,000
Daily average	1,631,000	1,368,000	.....	....	1,631,000	350	1,299,000	70,000	.....
1939	92,529,000	78,909,000	*13,620,000	*17.2	92,529,000	.....	72,362,000	6,547,000	84,399,000
Daily average	1,568,000	1,337,000	.....	....	1,568,000	.....	1,226,000	111,000	.....
Increase, 1940	5,331,000	3,195,000	.....	....	5,310,000	.....	5,565,000	†2,370,000	13,079,000
	5.7%	4.0%	.....	....	5.7%	.....	7.7%	†36.2%	15.5%
Kerosene									
1940	11,320,000	14,594,000	3,274,000	22.5	11,320,000	.....	13,905,000	689,000	4,302,000
1939	10,876,000	13,223,000	2,347,000	17.7	10,876,000	.....	11,881,000	1,342,000	5,452,000
Increase, 1940	444,000	1,371,000	.....	....	444,000	.....	2,024,000	†653,000	†1,150,000
	4.1%	10.4%	.....	....	4.1%	.....	17.0%	†48.7%	†21.1%
Gas Oil and Residual Fuel Oil¶									
1940	91,040,000	104,372,000	13,332,000	21.8	85,572,000	5,468,000	99,681,000	4,691,000	114,424,000
1939	76,219,000	91,872,000	15,653,000	17.0	74,107,000	2,112,000	85,762,000	6,110,000	125,012,000
Increase, 1940	14,821,000	12,500,000	.....	....	11,465,000	3,356,000	13,919,000	†1,419,000	†10,588,000
	19.4%	13.6%	.....	....	15.4%	159.0%	16.2%	†23.2%	†8.5%
Gas Oil and Distillate Fuels									
1940	33,352,000	43,500,000	10,148,000	23.3	32,810,000	542,000	40,717,000	2,783,000	24,640,000
1939	27,002,000	35,536,000	8,534,000	24.0	26,831,000	171,000	31,730,000	3,806,000	28,727,000
Increase, 1940	6,350,000	7,964,000	.....	....	5,979,000	371,000	8,987,000	†1,023,000	†4,087,000
	24.0%	22.4%	.....	....	22.3%	217.0%	28.3%	†27.0%	†14.2%
Residual Fuel Oils									
1940	57,688,000	60,872,000	3,184,000	5.2	52,762,000	4,926,000	58,964,000	1,908,000	89,784,000
1939	49,217,000	56,336,000	7,119,000	12.6	47,276,000	1,491,000	54,032,000	2,304,000	96,285,000
Increase, 1940	8,471,000	4,536,000	.....	....	5,486,000	2,985,000	4,932,000	†396,000	†6,501,000
	17.2%	8.1%	.....	....	11.6%	154.0%	9.1%	†17.2%	†6.7%
Lubricating Oils									
1940	6,416,000	5,733,000	*683,000	*11.9	6,416,000	.....	3,576,000	2,157,000	7,825,000
1939	5,049,000	4,793,000	*256,000	*5.4	5,049,000	.....	3,262,000	1,531,000	7,951,000
Increase, 1940	1,367,000	940,000	.....	....	1,367,000	.....	314,000	626,000	†126,000
	27.0%	19.6%	.....	....	27.1%	.....	9.6%	41.0%	†1.5%
Petroleum Wax (Lb.)									
1940	108,607,000	101,624,000	*6,983,000	*6.9	98,000,000	10,607,000	52,215,000	49,409,000	82,631,000
1939	74,402,000	85,311,000	10,909,000	12.8	68,600,000	5,802,000	47,808,000	37,503,000	117,711,000
Increase, 1940	34,205,000	16,313,000	.....	....	29,400,000	4,805,000	4,407,000	11,906,000	†35,080,000
	46.0%	19.1%	.....	....	43.0%	82.8%	9.2%	31.8%	†29.8%

*Excess supply. †Decrease. ‡Crude only. §Includes finished and unfinished refinery gasoline and natural gasolines. ¶Gas oil and fuel oil equals gas oil and distillate fuels plus residual fuel oils. Note: Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products based on refinery shipments. ‖Does not include 13,408,000 bbl. of heavy oils in California. Comparable figure for Feb. 28, 1939, 16,360,000 bbl.

Crude Oil Run to Stills and Total All Oils (Bbl.)

2 MONTHS—	TOTAL IMPORTS§	TOTAL EXPORTS§	TOTAL CRUDE TO STILLS	PER CENT YIELD GASOLINE‡	NATURAL GASOLINE PRODUCTION	TOTAL SUPPLY ALL OILS*	TOTAL DEMAND ALL OILS*	STOCKS ALL OILS FEB. 29*
1940	11,339,000	20,020,000	208,296,000	42.7	8,450,000	242,100,000	233,824,000	533,046,000
Daily average	189,000	334,000	3,472,000	....	141,000	4,035,000	3,897,000	.....
1939	6,944,000	25,116,000	187,411,000	44.9	8,011,000	211,275,000	213,393,000	564,928,000
Daily average	116,000	426,000	3,176,000	....	133,000	3,581,000	3,617,000	.....
Increase, 1940	4,395,000	†5,096,000	20,885,000	....	439,000	30,825,000	20,431,000	†31,882,000
	63.3%	†22.9%	11.1%	....	5.5%	14.6%	9.6%	†5.7%

*Total all oils include crude and refined products, natural gasoline, and benzol. Stocks Feb. 29, 1940, represented 137 days' supply which compared to 156 days on the same date in 1939. †Decrease. ‡Does not include natural gasoline blended at refineries. §Includes crude oil and refinery products. In case of imports includes receipts in bond and for domestic use. All data based on Bureau of Mines reports.

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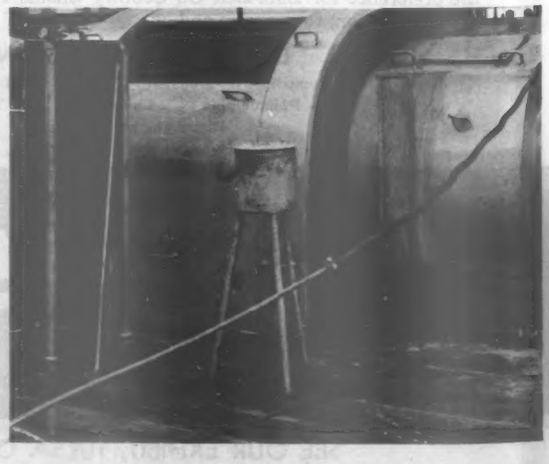

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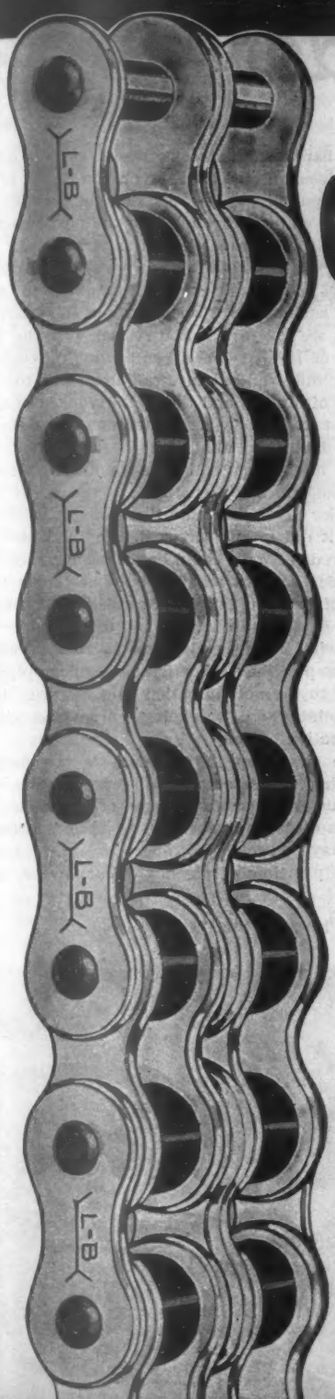

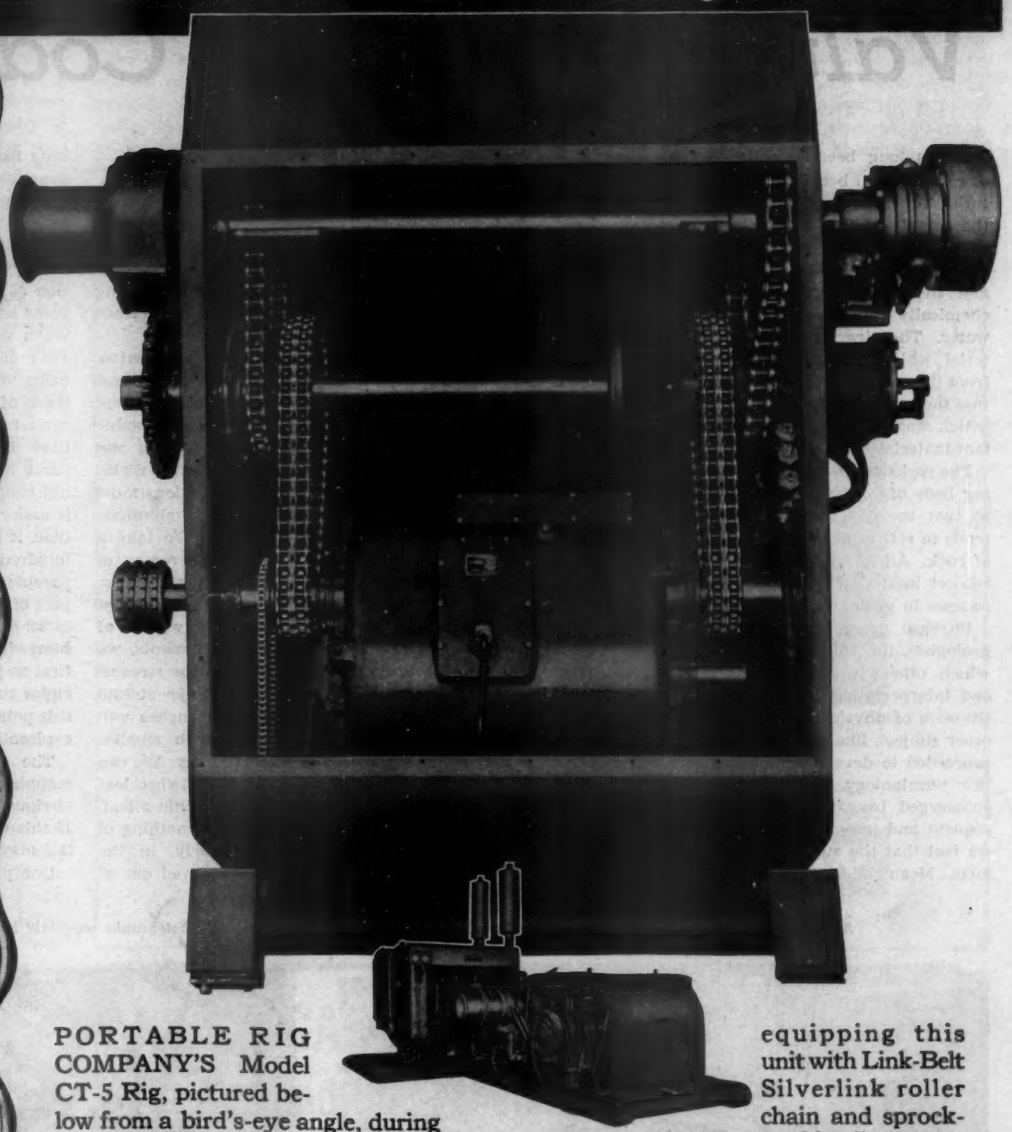

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Aerial Photographic Surveys Valuable on Gulf Coast

By W. V. HOWARD

IT has long been established that there is a relationship between topography and structure. The topographic features which make up the earth's surface are in large part carved out of the rocks. The rocks are broken down mechanically into smaller particles and both these and the massive rock bodies are acted upon chemically by the atmosphere and by ground water. The rivers carry millions of tons of material which has been broken away or leached from the rocks to the sea. It thus stands to reason that the remaining forms are composed of material which was not removed and that the more resistant materials tend to form ridges or elevations.

The rocks are composed, in the main, of alternating beds of resistant and nonresistant materials, so that the distribution of topographic features tends to reflect the distribution of different types of rock. All of this is elementary and forms the subject matter of a great part of all elementary courses in geology.

Physical geography is, in the minds of most geologists, the only scientific phase of geography which otherwise consists of tables of statistics and interpretations of these tables. As the practitioners of physical geography, like those of any other subject, like to be considered scientific, they proceeded to develop generalizations and a scientific terminology. As a result, we find ourselves submerged beneath consequent, subsequent, obsequent and insequent streams and the like until we feel that the subject is too deep for ordinary men. Meanwhile, a number of unlettered individuals have developed a sort of science which is contemptuously referred to as "creekology." What is more important is that many "creekologists" find oil. At this time, it appears that "creekology" has many more applications to the task of finding oil structures than the more pretentious science of physiography.

In order to be a valid scientific generalization, a statement should have no exceptions; at most it should permit only easily explainable apparent exceptions. When we deal with fluids as unstable as wind and water, moving over the earth and working upon such variable substances as rocks, it is obvious that any major generalizations must operate on a scale sufficiently large to eliminate complications due to local variables. To take a single example, we can say that in a region of horizontal or nearly horizontal beds, the drainage will be dendritic, while in an area composed of long closely spaced folds, the drainage will be of the trellis type. Explaining these statements, we can say that in the Mississippi basin, the streams will assume a tree-like pattern. The major stream will form the trunk, the principal branches will be like the branches of a tree, with smaller branches joining to form the larger ones. We can even carry the analogy to the smaller twigs, leaf stems and even the branching veins within a leaf. When we get this picture, we know something of the Mississippi River basin. Similarly, in the Appalachians, the long valleys are carved out of long bands of soft rocks, whether these occur in synclines, on anticlines, or on the flanks of folds. Occasionally, the streams flowing through these valleys will cut through into the next one and so on until they reach the major stream.

Carrying this still farther, we find a combination of radial and concentric drainage in uplifted areas such as the Black Hills and the Ozarks, but when we try to find the reason why the Middle Fork of Polecat Creek has a winding course for many miles and then straightens out for a distance of 3 miles and then gets crooked again, we cannot call on general statements. Many men have drilled on a hill on the convex side of a curve in a stream and have found oil because the hill conformed to structure and the stream found it easier to wind around the foot of the structure than it did to cut across it. On the other hand, hundreds of wells could be drilled in exactly comparable locations which would not show even a puff of gas. The finding of some local abnormality in stream position or of a hill or mound which is somewhat exceptional in appearance is only the first step in the application of physiographic principles to the determination of structure. It is at this point where "creekology" stops and scientific exploration begins.

The first step to be taken is obviously the mapping of the area which may contain rather obvious evidence of structure, or of the lack of it. If this evidence is sketchy, or absent, further detail may be required.

One principle of physiography may be applied

Aerial view of Avery Island (left) and aerial view of Barber's Hill dome (right). Photographs copyright by Edgar Tobin Aerial Surveys

in this preliminary work to good advantage, namely the classification of the area in terms of its relative age. In this instance, the term "age" has nothing to do with years, it deals with the length of time that has elapsed since the streams began to cut their way down to base level and the total length of time required to complete the process.

Areas are classified as "young," "mature" or old" according to certain general characteristics of drainage and relief. If the streams follow fairly straight courses and the uplands are flat, in other words, if the general slopes are convex upwards, the region is considered young. If the area is deeply dissected with a large number of streams and there are few flats, it is mature. Finally, if the streams meander all over a flat plain and there are few hills, the region is old.

Probably less can be found out from physiographic details in an old area than in either of the others. Generally, the hills remain simply because the streams had not got back to the point where they could reduce them to lower levels. The streams deposit large quantities of mud and silt over their courses and as these courses shift frequently, the valleys are covered with deep alluvium which completely mask outcrops and makes the determination of structure by surface mapping almost impossible.

In mature regions, structural details tend to stand out, particularly where the streams can cut down on the flanks of dome-like hills underlain by a resistant formation such as limestone. It is for this reason that "creekology" has been fairly successful in northeastern Oklahoma.

In young regions, the streams have not had time to outline structures, but they have a tendency to follow joints and fault traces which, in turn, give valuable information regarding the structural movements within the area.

Much also depends upon the nature of the underlying rocks. On the Gulf Coastal plain, where many of the surface rocks are soft clays, where there is little limestone and the stands are relatively unconsolidated, physiographic features are probably more difficult to classify than in a hard-rock region. It is in such a region that precise mapping is necessary and here the relief is often so low that precise mapping is difficult. In the early days of prospecting, every mound was drilled because each mound was a possible reflection of a shallow salt dome. Many were found to be due to other causes—a fact which could have been determined in advance by adequate mapping.

It must be remembered, however, that no map made on the ground can be accurate. The rod can be placed only at a limited number of points unless one wishes to prepare his map on a very large scale and spend months mapping a county—a proceeding which would be very expensive and also would attract considerable attention. Even then, significant spurs of mounds or straight gullies might be missed and the alignment of numbers of these features would almost certainly be disregarded.

The airplane map misses none of the features, significant or otherwise, and the time devoted to the study of a county may be spent in the secrecy of an office many miles away. In a preceding article (Apr. 18, 1940, p. 52), it was shown how the airplane map could be used as a base, not only for the delineation of topography but also for the delineation of structure. This method is not so directly applicable to a district such as the Gulf Coastal plain. In many cases, however, the airplane photograph shows up in startling detail the joint patterns in the area. These joints reflect the more recent structural movements which, in turn, are often reflections of earlier movements. If combined with geochemical prospecting or soil analysis, it might be found that significant concentrations of hydrocarbons or of mineralization coincided with intersections of master joints. This, in turn might easily lead to the location of a structure from which these emanations had come.

Similarly, airplane photographs would distinguish between mounds which might reflect domes and other types of elevation. The Gulf Coast has recently been elevated and prior to this elevation, the area was in the old-age stage of the topographic cycle. Streams meandered over the plain and like all old streams, they built up natural levees along their banks. On uplift, many of the streams deserted their former channels and recent erosion has cut through these levees leaving a series of mounds, some long and winding, and others round. Here, again the airplane photograph shows clearly the relationship existing between these mounds. The old stream channels can be picked out and the associated dissected levees can be determined. Locally unrelated mounds would furnish much more reasonable hopes of finding structures than these features which are so definitely depositional.

Thus, in areas which are relatively featureless, the airplane map is valuable for localizing the use of other prospecting methods rather than for direct prospecting on the surface. All prospecting involves the use of imagination and of speculation, but the more that one can determine before one begins to speculate, the more reasonably he can hope for success. By removing speculation and the use of imagination in the preparation of a surface map, and providing much more material on which to base one's conclusions, the airplane map is almost as essential in an area where it provides only indirect evidence of structure, such as the Gulf Coast, as it is in hard-rock areas where it gives evidences of structure which are more direct.

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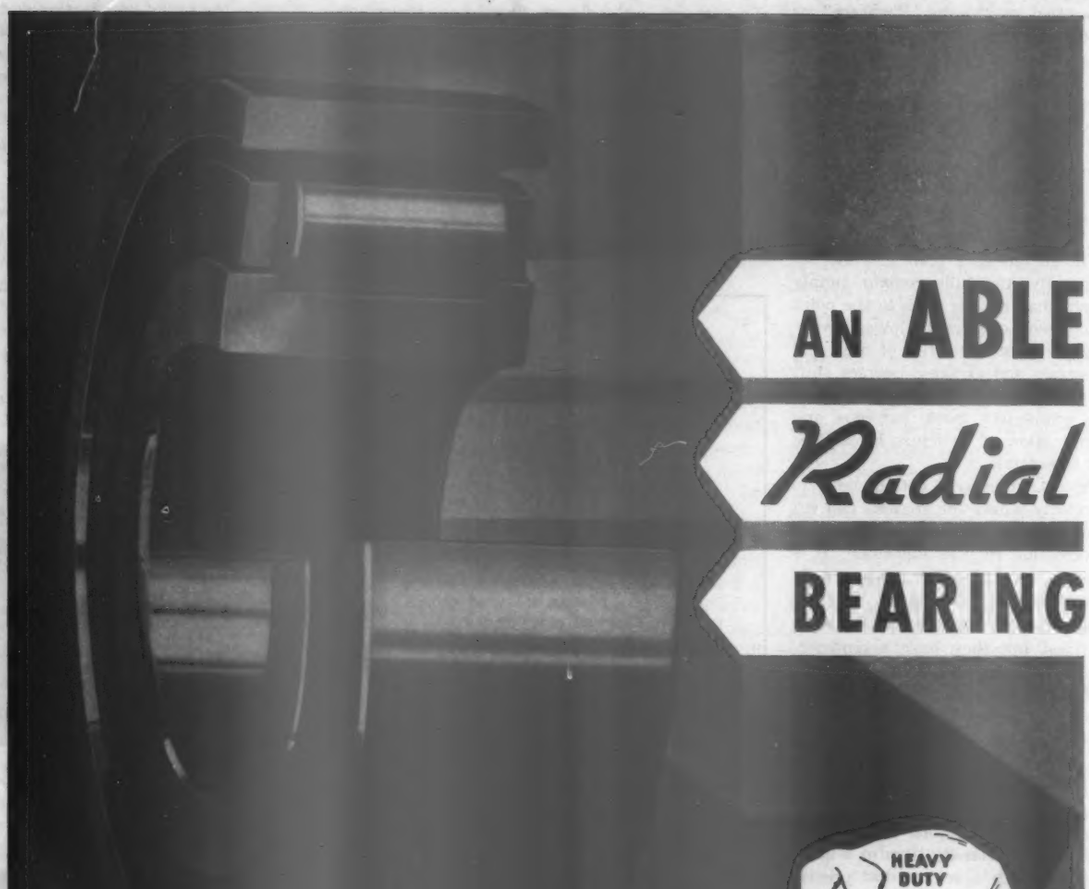

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A Comparison Between

Electrical Well Logging And Core Analysis

By P. B. LEAVENWORTH
Gulf Oil Corp., Houston, Tex.

MANY services are available to oil operators, who at times may have difficulty in choosing between two of possibly similar character, both of which have points of merit; two such services are electrical well logging and core analysis, each of which furnishes some data not indicated by the other; proper correlation of these data aids in the solution of certain problems which constantly confront the operators. The problems include correlation, well completion, estimates of oil and gas, and well spacing.

Electrical Logging

Electrical logging has been in general use for a number of years in the Gulf Coast area of Louisiana and Texas and the fundamental principles are well known.[1] We are not concerned in this paper with the manner by which electrical logs are obtained except insofar as is necessary to cope with the problems incidental to the interpretation of the records furnished the operator. The term "electrical logging" is applied to graphical records obtained by electrical measurements in the open hole of a well. The character of the beds penetrated and the fluid content thereof is interpreted from this record.

Two types of diagrams are discussed, the self-potential curve and the resistivity curve.

Self-Potential Curves

The self-potential curve, which has for its primary purpose the determination of the character of beds penetrated, is obtained by electrical measurements in the drill hole without the aid of any outside source of electrical energy. This curve is likely influenced by several factors, among which are electro-osmosis and electro-filtration.[2] The curve is generally accepted to mean variations in porosity or permeability of the section; hence the term "porosity curve." Self-potential curves, obtained by various systems, may usually be correlated without difficulty.

Correlation

The use of the self-potential curve in correlation has been discussed by Deussen and Leonardon,[2] and by Andrau.[3] Remarks here will be confined to recent developments in this technique and their application in the coastal area.

The graphic method of presenting the electrical record is a distinct advantage to the geologist in his work as well as in his ever-present problem of convincing the executive or production man of the validity of his arguments regarding the selection of locations and manner of completions.

The actual correlation is based on the similarity of phenomena in the self-potential curve which ordinarily occur below the point at which fresh ground exist; that is, where beds penetrated contain fluids of different electrical characteristics than those of the mud-laden fluid. Within local areas, and particularly on structure, these diagrams may be successfully correlated, often in great detail if desired. By means of intervals between sets of markers in various wells, loss of section due to faulting or pinchout may be detected. Valuable conclusions as to sand conditions and other pertinent data may also be drawn.

One condition must be clearly understood before successful correlation can be undertaken in the Miocene beds of the Gulf Coast. No normal section has yet been observed which may be utilized regionally or which will hold from field to field. There are several areas in which characteristic diagrams may persist over comparatively short distances but it is not practical to attempt any long-range correlation on these members. Consequently, the normal section for each field must be developed individually. Within a field an edge well will likely reveal longer intervals than a well on structure, and the diagrams themselves vary in character in different parts of a field. Early conceptions of structure may be radically changed as more data are acquired and knowledge of the true normal section developed. These facts, coupled with the intricate fault patterns which are common in many Gulf Coast fields, stress the need of caution in interpretation.

It is often difficult to be certain of the exact points at which faults cut various wells, especially in sections which have no outstanding markers. The desire to present a detailed contour map may often result in the refining of data beyond a reasonable certainty with the success of a well in the balance.

Logging companies are continually attempting to present all detail possible in sections where correlation problems exist and considerable success has met their efforts.

Resistivity Curves

The major differences in the records furnished by various logging companies occur in the "resistivity" curves which are made with the addition of an outside source of electrical energy. These curves have for their primary purpose the determination of fluid content of the beds penetrated. Several of these curves are now furnished the operator and they represent the electrical picture of varying diameters around the well hole.

The use of several curves was originated when resistances which would usually be indicative of oil or gas on the normal resistivity curve resulted in failure of these sections to produce upon testing. They are designed to aid the geologist in determining whether increases in resistance on the original resistivity curves are due to oil or gas, or to the invasion of drilling fluid into the formation around the well. These curves have been very helpful in certain instances.[3]

A.P.I.—Presented before southwestern district meeting at Houston, Tex., March 28-29, 1940

Many notable examples of the success of electrical logging in determining oil and gas shows which were drilled through without having been noted have been published. Facts concerning successful completion of wells in sands where electrical logging was the prime reason for testing are also known. The additional saving occasioned by the ability of the electrical log to detect salt water and the consequent saving in production tests which would otherwise have been made are important.

Definite increases in resistivity curves opposite increases in the self-potential curve distinguish oil and gas shows. However, the myriad variations and distortions of this picture present many perplexing problems. (Fig. 1.)

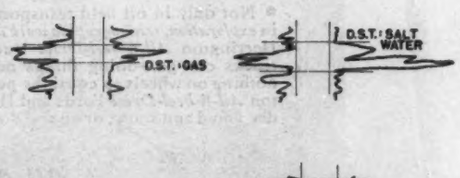

Fig. 1—Electrical diagrams and results of testing

These diagrams may mean:

1. An oil or gas show.
2. Hard sandstone or limestone.
3. Lignitic material.
4. Fresh water or sulfur water.

The use of sidewall cores has been a great aid in differentiating the above but many instances still remain where no reasonable explanation can be made of the failure of certain production tests.

The practice of testing electrical phenomena in old wells should be carefully undertaken. It is usually very difficult to test these sections properly without several "squeeze" jobs, and the practice of merely perforating and drill-stem testing without proper precautions having been taken to isolate the particular section to be tested should be condemned. It is, therefore, very pertinent that these diagrams have good promise of production before embarking on a perforating program.

Mention should also be made of instances where electrical logs fail to give a favorable picture in known producing horizons; namely, the Anahuac field and the Cotton Lake field, both in Chambers County, Texas. (Fig. 2.) In Anahuac it has been

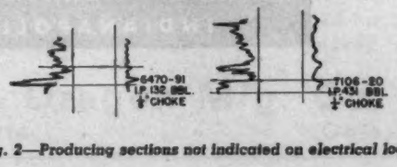

Fig. 2—Producing sections not indicated on electrical logs

found that a large per cent of connate water exists and in the Cotton Lake area bentonite in the oil section may explain why no increases in resistivity are present. In certain other areas similar conditions exist which are as yet unexplained. With these instances before us it is well to recognize that electrical logs are not infallible. Important sections in wildcats or fields should be carefully cored.

Estimates of Oil and Gas

In estimates of oil and gas, electrical logs are of great value. They aid in determining the gas-oil contacts and water levels. They give an idea of the possible productivity. Here again the interpretation must be tempered with experience in the particular field and combined with other data to present the best estimate possible.

In many instances no clear-cut gas-oil contacts may be noted, and the practice of selecting these points on electrical logs alone is hazardous and may result in an inaccurate conception of the section.

Well Spacing

Under proration we are faced with the problem of drilling as few wells as possible to adequately drain the fields and comply with lease obligations. That wells should be as favorably located as possible, both structurally and with reference to maximum sand development, is essential. Data concerning both vital points may be derived from electrical logs. In many fields lensing sand conditions may be the governing factor in accumulation.

Core Analysis

Core analysis consists of laboratory examination of cores to determine the following properties: porosity, permeability, oil-gas content, connate water content, chloride content and acid solubility. Wyckoff, Botset, Muskat, Reed and Meres have discussed permeability measurements[4] and their application.[5,6,7] Methods of determining fluid content have been described by Barnes,[8] Pyle and Jones.[9] Schilthuis,[10] Lewis and Horner have discussed these properties.

Application

Core-analysis data aid one in determining whether a test for oil or gas is justified, and provide some conception of the ability of the section in question to produce.

In many fields wide variations in permeability exist within the producing section and correlation is often possible by this means when other methods fail.

Well Completion

Core analysis is of value in the testing of wells as the range of permeabilities in any given section often varies widely. The productivity index of core analyses[11] in multiple-sand areas may often aid in selecting the most desirable section to test. Gas-oil contacts and oil-water contacts, and even gas-oil ratios may be determined by core analysis. Subsequent water difficulties may be lessened by study and proper completion methods (Fig. 3).

It is well to proceed cautiously when faced with

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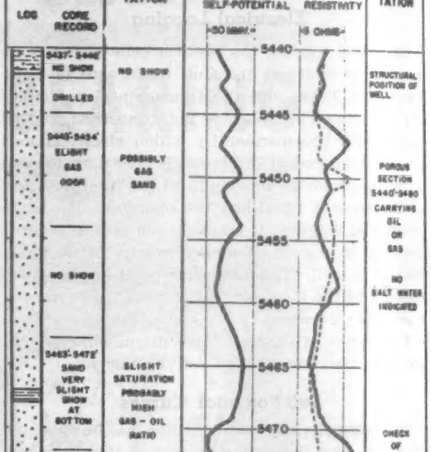

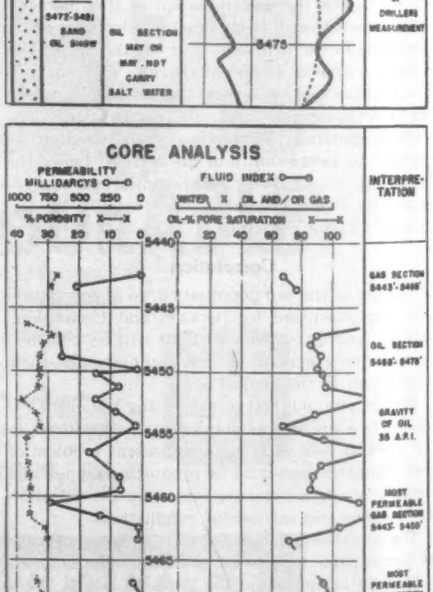

Fig. 3—Comparison of electrical log and core analysis

large drilling costs and low allowables. Under proration, wells of quite low permeability may give favorable potential flows over relatively short periods, and when restricted to low daily allowables may perform in a satisfactory manner over considerably longer periods, thus appearing to justify a more active drilling campaign than would be the case if the wells were flowed at larger rates. In the latter instances, well performance could be fairly well determined early in the development. Permeability measurements give an index to well capabilities under proration.

If very permeable members exist in the section production will come much more rapidly through these members with consequent rapid encroachment of water. If more permeable members should happen to exist above less permeable ones, it may easily be seen that the lower section might be badly damaged by water.

It has been the consensus in the past that wells should be tested in the most permeable members in an effort to secure the most prolific production. It is well to consider the practicability of completing in the structurally highest, lease permeable member which would give an adequate flow if long life and a low rate of production are to be the conditions under which the well must operate, providing that this practice is confined to a single producing horizon.

Estimates of Oil and Gas

The data acquired are of value in arriving at estimates of recoverable oil in that the porosity will give the volume of fluid in place within a certain reservoir if its limits are defined. The permeability will give an index as to the rate at whch wells may be produced efficiently. The gas and oil contacts are, of course, pertinent and the connate-water content of the horizon must be deducted from the total fluid content.[12]

One point which must be clearly kept in mind is that the actual liquids or gases present in cores at the surface are greatly diluted by drilling mud and much of the gas originally present may have been dissipated by reduction in pressure while the core was being removed from the well. Consequently, the observations as to fluid and gas content must be compensated for these losses which are known to be very great. In this fact lies one inherent disadvantage of the method as the human element must be called upon to attempt to reconstruct the actual underground fluid conditions from meager data. The success of core analysis is due to the careful research and close comparison of case histories in many areas. As technique is developed further improvement may be expected.

Under wide well spacing, which is now common in the Gulf Coast, we must not be prone to evaluate too accurately the entire area on data secured from a very few wells. The ratio between the volume of material recovered by a 3-in. core barrel with full recovery and the volume of a 20-acre spacing unit is of the order of magnitude of 1:17,000,000.

When the lenticular character of the producing section in many fields is considered, together with wide ranges in permeability and variation in other factors derived from core analysis, it may readily be seen that we should proceed cautiously. These facts are mentioned not with the thought of decrying the use of any available data, but to emphasize the difficulty in compiling accurate estimates.

Well Spacing

The data derived from core analysis may be of value when planning a drilling campaign as high permeabilities may indicate that wide well spacing would secure all the recoverable oil where low permeabilities may require much closer spacing.

The type of drive—whether water or gas drive—would have considerable bearing.

The rate of efficient withdrawals may be estimated from core analysis.

In deciding between core analysis and electrical logging, the following conclusions may be helpful:

Regional correlation.—The electrical log is probably sufficient.

Field correlation.—For the determination of structure the electrical log. For details of the producing section both electrical log and core analysis.

Well completion.—Both are of value as great detail is often necessary to successful completion, particularly in thin sand fields and where gas and water problems are important.

Estimates of oil and gas.—Both are of value as the same problems exist as in well completions.

Well spacing.—Both are valuable, as core analysis may indicate rate of efficient withdrawals and electrical logs the structure and thickness of pay members.

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FIELD OPERATIONS

Summarizing the Week's Developments

TEXAS: Gulf Coast—The Rosenberg field, Fort Bend County, was defined on the southeast by an 8,338-ft. dry hole. The Thompson field was cut off on the south by an 8,612-ft. failure.

Southwest Texas—Crude-oil production was found in the Mathis distillate field in San Patricio County. A pool appears to have been opened 3 miles southwest of Sinton in San Patricio County. A gas well was completed midway between Kelsey and Sun fields.

West Texas—A new Ordovician oil-producing spot is believed to have been opened in central Crane County, just west of the Sand Hills field. The well found saturation in the Ellenburger lime after having found the Simpson section missing.

North Texas—Field extensions and new wildcat activity, together with the continued lease play, held the attention in North Texas for another week on the much discussed but little known Fort Worth syncline.

West Central Texas—A Palo Pinto lime wildcat in Jones County, originally contracted to the 3,400-ft. level, is showing for a field opener at about 2,700 ft. Casing is being reamed through a water sand after which the showing will be tested before continuing deeper.

CALIFORNIA—The drilling campaign in the Montebello field with the deeper 8-3 zone as the objective is on in earnest. The favorable gas-oil ratio in wells in that horizon make it attractive.

KANSAS—A discovery well was completed in the Kraft area, Barton County. An intermediate well proved the connection between the two Bornholdt pools in McPherson County. Sale of Carter Oil Co.'s property in the Lindsborg pool, McPherson County, to M. & L. Oil Co., Wichita, was announced.

OKLAHOMA—A wildcat southwest of the Cumberland pool discovery well in Marshall County had an oil showing, with water, from an unidentified source. A Cromwell sand pool was opened near Okemah, Okfuskee County. Pool openers were completed in northern and northwestern Lincoln County.

ILLINOIS—Sixty-one new oil wells were completed in the past week. Two Centralia operators announce they will drill to 10,000 ft. on the Centralia townsite to test all Illinois formations. Production of the state increased 11,362 bbl. to 433,116 bbl. per day.

LA-ARK-TEX—The seventh pool discovered this year in the coastal Louisiana district is on the Belle Chasse prospect in Plaquemines Parish, producing from 9,963-74 ft. The well flowed 22 bbl. an hour on a drill-stem test. La Place field in St. James Parish was extended ½ mile. A new producing sand was opened in the old Jennings field in Acadia Parish around 8,000 ft., and in the Barataria field in Jefferson Parish at 9,790 ft.

MICHIGAN—Nineteen new oil wells during the week gave the Michigan situation a more favorable aspect.

Completions in All Fields

(Week Ended April 20, 1940)

	Oil	Gas	Dry	Total	1940 total comp. to date	1939 total comp. to date
N. Y., Pa., and W. Va.	60	9	3	72	1,179	955
Ohio	6	8	7	21	295	268
Indiana	3	1	11	15	113	41
Kentucky	5	0	3	8	122	175
Illinois	61	0	10	71	1,031	1,007
Michigan	19	0	6	25	408	354
Kansas	25	0	6	31	443	328
Oklahoma	22	3	9	34	540	533
Texas:						
North Central Texas	19	0	12	31	961	685
West Texas	42	0	2	44	695	575
Texas Panhandle	9	2	0	11	181	113
East Texas	3	0	0	3	88	178
East Central Texas	1	1	0	2	77	73
East Texas Border	0	0	0	0	16	22
Gulf Coast Texas	19	1	4	24	406	406
Southwest Texas	38	1	19	58	731	719
Total Texas	131	5	37	173	3,155	2,771
North Louisiana	3	1	2	6	173	158
Gulf Coast Louisiana	14	0	3	17	268	175
Total Louisiana	17	1	5	23	441	333
Arkansas	1	0	2	3	67	72
Montana	6	0	0	6	43	40
Wyoming	5	0	0	5	51	29
Colorado	0	0	0	0	6	3
New Mexico	16	1	5	22	230	175
California	16	0	3	19	317	294
Total United States	393	28	107	528	6,441	7,378
Total previous week	390	39	122	551		
Week ended Apr. 22, 1939	309	30	85	424		

Outstanding Fields—Highlights

(Week Ended April 20, 1940)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	32	48	1	1,220	1,312	39,447
Wasson-Bennett	11	58	9	7,659	763	33,436
Ector County	26	69	14	17,655	2,079	59,000
Pecos County	5	12	6	1,984	1,256	36,447
Jones County	7	19	4	1,158	606	8,300
East Texas	6	10	3	112	26,015	396,697
OKLAHOMA						
St. Louis	3	13	1	150	878	30,000
Cement	2	18	1	1,617	302	6,500
KANSAS						
Bemis	1	6	3	723	283	6,290
Burnett	4	11	1	350	80	4,790
Silica	1	14	5	724	621	11,650
Trapp	3	10	2	331	508	12,150
NEW MEXICO						
Lea County	14	41	10	2,597	2,440	96,560
Eddy County	11	64	6	2,279	551	17,730
LA-ARK-TEX						
Cotton Valley, La. (deep)	0	3	1	720	103	14,850
Magnolia, Ark.	0	3	0	0	158	20,205
Golden Meadow, La.	5	13	0	0	73	11,000
MICHIGAN						
Freeman-Redding	0	10	1	178	140	13,861
Kent County	6	20	4	794	300	16,572
CALIFORNIA						
Montebello	0	17	2	818	354	21,210
ILLINOIS						
Salem	16	82	20	17,053	1,858	258,110
Louden	3	18	10	2,083	1,405	72,216
Other basin fields	50	288	31	13,904	2,608	93,960
Old fields	...	...	...	...	...	8,830
MISSISSIPPI						
Tinsley	1	8	2	820	40	6,250

Illinois, Indiana and Kentucky

By STAFF CORRESPONDENT

Many Completions and More Production Is Illinois Record

CENTRALIA, Ill., Apr. 22.—Production in Illinois increased to 433,116 bbl. per day in the week ended Saturday, April 20. This was 11,362 bbl. higher than the daily average in the previous week. Salem produced an average of 258,110 bbl. per day last week: Louden 72,216 bbl.; other basin fields 93,960 bbl. and the old fields 8,830 bbl.

Sixty-one oil wells were added to Illinois fields last week including 17 Devonian lime producers in the Salem field and 18 Devonian wells in the Centralia field. Altogether 36 out of the 61 new oil wells are Devonian lime wells, and all in Marion and Clinton counties. There were 10 dry holes abandoned, 2 in Effingham County, 2 in Fayette, and 1 each in Richland, Wabash, Edwards, Wayne, White and Jersey counties.

The number of new wells and their actual initial production follows: Fayette County, 11 wells, 2,263 bbl.; Marion County, 25 wells, 18,984 bbl.; Richland, 2 wells, 96 bbl.; Clay, 1 well, 624 bbl.; Washington, 1 well, 22 bbl.; Edwards, 2 wells, 692 bbl.; Jefferson, 1 well, 128 bbl.; White, 4 wells, 881 bbl.; Clinton, 14 wells, 9,350 bbl.

The initial production of the 17 Salem Devonian wells was 16,071 bbl. but the rated potential of these wells conservatively based was 35,861 bbl. The largest well of the week was completed in Section 31-2n-2e. It flowed 4,826 bbl. the first 24 hours. A couple of Devonian wells in Section 31 fell off rapidly after a good start. A well of the Texas Co. flowed at the rate of 181 bbl. per hour for 3 hours, but fell to 99 bbl. per hour in a 13-hour production test. Another well in the same section that flowed 293 bbl. per hour for 3 hours dropped to 164 bbl. per hour in an 8-hour test.

Eighteen Devonian wells were completed in the Centralia field, 13 on the Clinton County or western suburban part, and 5 in the Marion County townsite of Centralia. Ninety-nine wells are drilling to the Devonian, 27 within the city limits of Centralia and 72 on the Clinton County or suburban part of the field.

Fourteen new operations were started in the Louden field of Fayette County, most of them by the Carter Oil Co. Altogether about 75 operations were started in the state.

J. B. Barnes' No. 1 Martin, C W½ NW SW Section 7-6s-9e, on the edge of the Stokes field, in White County, swabbed 190 bbl. of oil in 24 hours and flowed by heads before being tubed, from St. Louis lime. It is the first producer from the formation in White County. The well has been a light producer from the McClosky since last December, but recently was deepened to 3,156-60 ft. with cable tools.

Carter Oil Co., largest operator in the Louden field in Fayette County, is expected to start this week drilling a wildcat south of the Salem field in Marion County and 1½ miles northwest of the Dix pool in Jefferson County. It will be No. 1 Prather, SE NW SW Section 28-1n-2e.

Gordon MacLean and Dave Ring of Centralia announce that they will drill their No. 1 Lloyd in the Centralia townsite in Marion County to 10,000 ft., or as deep as will be necessary to explore every possible oil-bearing formation in the area. On last report the well was still above the Devonian lime horizon.

A geological table for this area revealed that the operators will encounter the following formations below the Devonian: Trenton (Silurian) about 2,700-2,900 ft.; Maquoketa, Kimmswick, Plattin, Joachim, St. Peter sand (about 4,200-4,500 ft.); Powell, Cotter, Jefferson City, Gasconade, Van Buren, Proctor, Eminence, Potosi, Derby-Doerun, Davis, Bonneterre and Lamotte sand. The last named formation, just above the granite, probably will be found at about 6,500 to 7,000 ft., and may extend several hundred feet deep.

Pure Oil Co.'s deep test in Wayne County, No. 3 Billington, in Section 27-1n-7e, was drilling at 7,000 ft. on Friday and was believed to be within a few hundred feet of the top of the St. Peter formation. This is the deepest hole ever drilled in the state.

The important test of Jarvis and others in Section 22-2n-9e, Wayne County, was dry at 3,193 ft., or through the McClosky lime, and was abandoned.

In Effingham County Peyton & McGraw's No. 1 Beck, SW cor. Section 30-9n-4e, was dry and abandoned at 1,707 ft. Bethel sand at 1,690-1,707 ft. had only a small showing of oil, while Cypress sand at 1,620-40 ft. contained only water. Frank Mitchell and others' No. 1 Zumbahlem, NW NE SE Section 26-9n-6e, was dry and abandoned at 2,656 ft. Small showings of oil were found in Bethel sand at 2,267-81 ft.; Aux Vases sand was topped at 2,319 ft.; Ste. Genevieve lime was topped at 2,391 ft., and St. Louis lime at 2,514 ft.

Fayette County

In Fayette County Carter Oil Co.'s No. 1 W. W. Hogg, NW SW NW Section 1-8n-3e, in the Louden field, was shot with 30 qt. at 1,534-44 ft. (Cypress sand), and pumped 222 bbl. initially. Delworth's No. 1 Weaber, SE NW NW Section 28-8n-3e, was abandoned at 250 ft. Carter Oil Co.'s No. 7 Dial, NE SW NE Section 33-8n-3e, shot with 20 and 30 qt. in Cypress and Bethel sands topped at 1,453 ft. and 1,559 ft.; total depth 1,586 ft. It pumped 606 bbl. Carter's No. 19 Durbin, SW NW SW Section 4-7n-3e, shot with 40 and 20 qt. in Cypress sand and Paint Creek stray, topped at 1,475 ft. and 1,540 ft., total depth 1,575 ft., pumped 330 bbl. Carter's No. 5 M. Finch, SW NE SW Section 4-7n-3e, shot with 10 qt. at 1,464-67 ft. and with 15 qt. on bottom at 1,543 ft.; Cypress sand topped at 1,463 ft. and Paint Creek stray at 1,522 ft., pumped 198 bbl. Carter's No. 13 H. Welker, SE SE SE Section 7-7n-3e, shot with 15 qt. at 1,557-62 ft. and with 10 qt. at 1,540-44 ft., total depth 1,562 ft., pumped 282 bbl. Papoose Oil Co.'s No. 6 Owens, NW SW NW Section 8-7n-3e, shot with 60 and 40 qt., total depth 1,560 ft., pumped 150 bbl. Shell Oil Co., Inc.'s No. 1 W. F. Smith, NW SW SE Section 21-7n-3e, Cypress sand at 1,562-77 ft., shot with 4 qt., pumped 68 bbl. St. Elmo Oil Corp.'s No. 1 Wiseman, NE NW NW Section 27-7n-3e, dry and abandoned at 2,015 ft. It found all the usual Fayette pays dry and likewise McClosky lime topped at 1,995 ft.

Shulman's No. 12 Combe, SE SW SW Section 6-6n-3e, Cypress sand at 1,571-82 ft., shot with 20 and 30 qt., pumped 75 bbl. Texas Co.'s No. 4 J. Sworm, SW NE SW Section 30-6n-3e, Cypress sand at 1,546-60 ft., shot with 6 qt., pumped 119 bbl. Texas' No. 3 C. Wright, SW NE NW Section 31-6n-3e, total depth 1,641 ft., where it tested water; plugged back to 1,616½ ft. and pumped 33 bbl. of oil and 12 bbl. of water in 6 hours from Cypress sand.

Ohio Oil Co.'s No. 12 J. Sworm, NE NE SE Section 36-6n-2e, St. James pool, Cypress sand at 1,580-1,615 ft., shot with 8 qt., pumped 180 bbl.

Richland County

In Richland County Pure Oil Co.'s No. 1 Bessie Hearn A, C W½ SE SW Section 30-5n-10e, total depth 2,900 ft., plugged back to 2,824 ft. on top of Rosiclaire lime, pumped 59 bbl. Pure's No. 5 Glossbrenner, C W½ NW NW Section 31-5n-10e, McClosky lime at 2,830-39 ft., pumped 37 bbl. of oil and 41 bbl. of water. Jarvis Brothers and others' No. 1 Hazel estate, NE NE NW Section 22-2n-9e, dry and abandoned at 3,151 ft. Fredonia lime topped at 3,110 ft.; small showing of oil at 3,112-18 ft.

In Clay County Pure Oil Co.'s No. 13 J. Hubble, C E½ SW SW Section 33-2n-8e, Fredonia lime topped at 3,008 ft., total depth 3,110 ft., acidized with 5,000 gal., flowed 624 bbl.

Marion County

In the Salem field in Marion County 17 Devonian lime wells were completed with a total actual initial production of 16,071 bbl. Texas Co.'s No. 13 W. Martin, SE SW SE Section 17-2n-2e, flowed 246 bbl. in three hours and was rated at 1,120 bbl. per day. Devonian pay at 3,430-72 ft. was acidized with 5,000 gal.

W. R. Curry's No. 10 Young strip, SE NE SE Section 20-2n-2e, had pay at 3,395-3,425 ft., acidized with 1,000 gal., pumped 72 bbl. Ohio Oil Co.'s No. 41 M. Young heirs, NW NE SW Section 20, pay at 3,413-56 ft., acidized with 5,000 gal., flowed 457 bbl. in 6 hours, rated at 1,830 bbl. a day. Ohio's No. 43 M. Young heirs, SW SE SW Section 20, pay at 3,419 to 3,457 ft., acidized with 5,000 gal., flowed 367 bbl. in 3 hours, rated at 2,120 bbl. per day. Texas Co.'s No. 7 Sweney, SE SW NW Section 20, pay at 3,460-96 ft., acidized with 5,000 gal., flowed 260 bbl. in 3 hours, rated at 1,163 bbl.

Magnolia Petroleum Co.'s No. D. A. Shanafelt, NW NW NW Section 21-2n-2e, pay 3,441-95 ft., acidized with 4,000 gal., flowed 2,608 bbl. in 24 hours. Texas Co.'s No. 24 D. Young, NE SW NW Section 21, pay at 3,452-92 ft., 5,000 gal. of acid, flowed 213 bbl. in 3 hours, rated at 1,703 bbl. per day.

Magnolia Petroleum Co.'s No. 107 J. H. Young, SE NW NW Section 28-2n-2e, pay at 3,437-3,507 ft., acidized with 5,000 gal., flowed 1,959 bbl. Texas Co.'s No. 20 J. Chapman, SE SW SW Section 28, Devonian pay at 3,406-43 ft., 5,000 gal. of acid, flowed 310 bbl. in 3 hours, rated at 1,900 bbl.

Ohio Oil Co.'s No. 22 M. J. Young, SE NE NW Section 29-2n-2e, pay at 3,437-56 ft., 5,000 gal. of acid, flowed 385 bbl. in 3 hours, rated at 2,700 bbl. a day. Ohio Oil Co.'s No. 42 M. Young heirs, NW SE NW Section 29, pay at 3,434-50 ft., 5,000 gal. of acid, flowed 423 bbl. in 9 hours, estimated at 1,000 bbl. per day.

Magnolia Petroleum Co.'s No. 5 Mary Harley, SE SW NE Section 31-2n-2e, pay at 3,310-76 ft., 5,000 gal. of acid, flowed 4,826 bbl. Texas' No. 7 Reed B, NW NW SE Section 31-2n-2e, pay at 3,352-97 ft., 5,000 gal. of acid, flowed 544 bbl. in 3 hours, or at the rate of 181 bbl. per hour, but the production eased off to an average of 99 bbl. per hour when the well flowed 1,281 bbl. in 13 hours. Texas' No. 12 W. Stroup, SE SE NW Section 31-2n-2e, pay at 3,346-83 ft., 5,000 gal. of acid, flowed 778 bbl. in 3 hours or at the rate of 293 bbl. per hour. Then it flowed 1,315 bbl. in 8 hours, or at the rate of 164 bbl. per hour. Texas' No. 22 H. Wayman, NE NE NE Section 31-2n-2e, pay at 3,338-80 ft., 5,000 gal. of acid, flowed 464 bbl. in 3 hours; rated at 2,309 bbl. per day.

Texas Co.'s No. 7 Hopkins, NW NE SE Section 31-2n-2e, pay at 3,296-3,337 ft., flowed 275 bbl. in 24 hours naturally, but after 5,000 gal. of acid it flowed 596 bbl. in 3 hours and was rated at 2,770 bbl. a day.

Texas Co.'s No. 12 F. Miller, NE NE SE Section 32-2n-2e, pay at 3,448-86 ft., 5,000 gal. of acid, flowed 305 bbl. in 3 hours, rated at 1,657 bbl. per day.

Texas Co.'s No. 8 McCoy, NW NE NW Section 33-2n-2e, pay at 3,422-54 ft., 5,000 gal. of acid, flowed 368 bbl. in 3 hours, rated at 1,729 bbl. per day. Wiser Oil Co.'s No. 14 Weems, SE NW NW Section 33-2n-2e, pay at 3,463-97 ft., 5,000 gal. of acid, flowed 639 bbl. in 5 hours, rated at 2,565 bbl. per day.

Only three wells were completed in the Salem field in pays above the Devonian lime. Texas Co.'s No. 9 Sands, C S½ NW SW Section 33-2n-2e, pumped 13 bbl. of oil and 7 bbl. of water from McClosky lime

at 2,037-46 ft. and 2,052-62 ft. It had not been acidized. Texas Co.'s No. 17 E. Tate, SE NW NW Section 5-1n-2e, flowed 718 bbl. naturally from Fredonia lime pay at 1,875 ft., total depth 1,970 ft. Magnolia Petroleum Co.'s No. 76 J. H. Young, NW NE NW Section 28-2n-2e, McClosky lime topped at 1,994 ft., total depth 2,289 ft., acidized with 8,000 gal., pumped 251 bbl. per day from Salem lime.

Texas Co. drilled a salt-water disposal well in No. 13 Farthing C to a total depth of 1,123 ft. Pottsville sand was topped at 1,071 ft. This is above all the pay sands in the field.

In Clinton County Robben Oil Co.'s No. 1-D B. Schlormann, NW cor. Section 9-1n-3w, in the Bartelso field, topped the lime at 2,453 ft. and topped the pay at 2,463 ft., total depth 2,484 ft. It was acidized with 500 and 1,500 gal. and pumped 150 bbl. per day.

In the Cordes pool, Washington County, Shell Oil Co., Inc.'s No. 2 Goodner, SW NW NE Section 26-3s-3w, had Benoist pay at 1,275-80 ft. and pumped 22 bbl. of oil and 7 bbl. of water.

In Wabash County O'Meara's No. 1 Couch, SW SW NW Section 16-1s-12w, was dry and abandoned at 2,053 ft. after penetrating Cypress sands at 1,995-2,010 ft. and 2,040-53 ft.

In the Centralia Field

John Paising's No. 1 I.C.R.R., SW cor. NE SW Section 18-1n-1e, in the Marion County side of the Centralia field, pay at 2,916-23 ft., acidized with 750 gal., flowed 475 bbl. of oil with a small showing of water. Koenig's No. 1 Bergman, NE cor. NW SW Section 18-1n-1e, pay at 2,905-60 ft., 3,000 gal. of acid through perforations at 2,903-14 ft. and 2,927-35 ft., flowed 412 bbl. through ⅛-in. choke. Mohawk Oil Co.'s No. 1 Backsmeiler, NW cor. SW NW Section 18-1n-1e, pay at 2,906-30 ft., acidized with 2,000 gal., flowed 499 bbl. in 17 hours through a ¼-in. choke. Halstead's No. 1 Centralia Coal Co., pay at 2,895-99 ft., total depth, acidized with 500 gal., flowed 116 bbl. Paul Doran's No. 1 Koelling, NE SW SW Section 18-1n-1e, Devonian pay at 2,897 ft., total depth 2,954 ft., perforated pipe at 2,896-2,910 ft., acidized with 5,000 gal., flowed 429 bbl.

In the Clinton County side of the Centralia field Brookside Oil & Gas Co.'s No. 6 B.&Q.R.R., NW cor. SE NW SE Section 1-1n-1w, Benoist sand at 1,335-41 ft., 80 bbl. a day with 10 bbl. of water after a 10-qt. shot. Blowers' No. 8 City Park, NW cor. NE Section 13-1n-1w, Devonian pay at 2,924-33 ft., total depth, 2,000 gal. of acid, flowed 960 bbl. J. B. Barnes' No. 1 Bierman-Kuhn, NE NE SE Section 13-1n-1w, pay at 2,897-2,917 ft., shot with 20 qt. and acidized with 750 gal., flowed 113 bbl. Ryan & Swartz' No. 1 Underwood, NE cor. SW NE SE Section 12-1n-1w, pay at 2,901-08 ft., 1,000 gal. of acid, flowed 412 bbl. P. C. Perry's No. 2 Roth, SE SW SE Section 12-1n-1w, pay at 2,910-23 ft., 1,000 gal. of acid, flowed 200 bbl. H. N. Hicks, trustee's No. 1 Leber, NW NE SE Section 12-1n-1w, pay at 2,903-15 ft., 1,500 gal. of acid, flowed 721 bbl. Carl Ewing's No. 1 Butler, NE NE SE Section 12-1n-1w, pay at 2,917-29 ft., 500 gal. of acid, flowed 840 bbl. J. Amundson, NW NE SE Section 12-1n-1w, 2,000 gal. of acid, flowed 432 bbl. T. E. Yemm's No. 12 Allison, SE cor. NW SE Section 12-1n-1w, pay at 2,899-2,911 ft., 2,000 gal. of acid, flowed 808 bbl. Algona Oil Co.'s No. 2 Marchall, SE SW Section 12-1n-1w, flowed 1,501 bbl. naturally from pay at 2,912-21½ ft. Taylor Drilling Co.'s No. 4 Baker, SE cor. SW SE Section 12-1n-1w, 1,000 gal. of acid in pay at 2,904-14 ft., flowed 1,080 bbl. L. Lilly and others' No. 2 Heeds, SW cor. NE SE Section 12-1n-1w, pay at 2,904-17 ft., 750 gal. of acid, flowed 528 bbl. Taylor Drilling Co.'s No. 3 Baker, NE cor. SW SE Section 12-1n-1w, pay at 2,901-12 ft., flowed naturally 1,605 bbl. in 20 hours, through casing.

Near Completions

Lacki and others' No. 1 Hanseman, SE cor. SW SE Section 1-1n-1w, on the Clinton County side of the field, flowed 200 bbl. in 12 hours from Devonian pay at 2,909-15 ft., but it was not a completion. Cokin & Manta and others' No. 1 Coe, SW SE SE Section 13-1n-1w, flowed 604 bbl. the first 24 hours and 279 bbl. the fifth 24 hours from Devonian lime at 2,878-2,928 ft., but it was not yet a completion. Ethridge's No. 1 Leber, NW NE SE Section 12-1n-1w, pay at 2,904 ft., total depth 2,924 ft., acidized with 2,000 gal., flowed 312 bbl. in 12 hours, still testing. Johnson & Burnham's No. 1 Buehler, SE SE SE Section 13-1n-1w, flowed 165 bbl. in 24 hours from pay at 2,900-15 ft., which had been shot with 30 qt.; cleaning out.

In Edwards County Superior Oil Co.'s No. 1 Woods, NW SW NW Section 19-2s-11e, had McClosky lime at 3,115-29 ft., acidized it with 1,000 gal., and the well flowed 467 bbl. of oil through a ¾-in. choke in 21 hours together with 150,000 cu. ft. of gas. The oil tested 36.8° in gravity. Jarvis Brothers and others' No. 1 Wick, NE SE NE Section 24-2s-10e, Waltersburg sand at 2,374-87 ft., pumped 48 bbl. of oil in 4 hours and later 225 bbl. in 24 hours. Wilson Drilling Co.'s No. 1 Curtis, C W½ NE SE Section 13-3s-10e, was dry and abandoned at 3,261 ft. McClosky lime was topped at 3,183 ft.

In Jefferson County Magnolia Petroleum Co.'s No. 3 Harvey, SW NE SW Section 22-2s-1e, had Fredonia lime at 2,175-89 ft. and pumped 128 bbl. without an acid treatment.

In White County Sun Oil Co.'s No. 2 Ford, C W½ NE SE Section 18-5s-14w, topped Ste. Genevieve lime at 2,996 ft. and drilled to 3,009 ft. It was acidized with 1,000 gal. and flowed 169 bbl. in 12 hours. Sun's No. 3 Ford, NW SE SE Section 18-5s-14w, was dry and abandoned at 3,133 ft. Fredonia lime was topped at 2,995 ft. and pay at 3,033-35 ft. It was acidized with 1,000 gal. through perforations. There was no fill-up of oil.

In Wayne County Cook Oil Co.'s No. 1 Griffin, NW NW NE Section 33-3s-9e, was dry and abandoned at 3,519 ft. Rosiclaire lime was topped at 3,422 ft. A drill-stem test of 30 minutes at 3,463-85 ft. developed only 30 ft. of oil and 90 ft. of mud and salt water.

In Fayette County Hammer's No. 1 Snodgrass, 343 ft. from the north line and 256 ft. from the east line of SW SE Section 36-6n-2e, was drilling at 655 ft.

In the Irons pool Carter Oil Co.'s No. 2 Poole, SE SW SE Section 24-6s-8e, had Hardinsburg sand at 2,501-22 ft., total depth 2,577 ft. It was shot with 40 qt. and pumped 336 bbl. per day. Shell Oil Co., Inc.'s No. 2 Austin, NW NE NW Section 25-6s-8e, had Hardinsburg sand at 2,482-2,506 ft. It was shot with 10 and 10 qt. and pumped 234 bbl. Kingwood Oil Co.'s No. 4

Jensen Jack No. 10 powered by Continental Red Seal PY-91.

Red Seal units F-140 and F-162 operating 7½ K.V.A. and 10 K.V.A. generators. Automatic starting on peak load.

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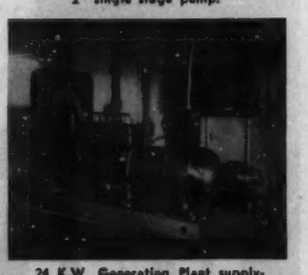

24 K.W. Generating Plant supplying current to individual pumpers for light and power.

Continental Motors Corporation
MUSKEGON, MICHIGAN

Bailey, NE cor. SE NW Section 25-6s-8e, Hardinsburg sand at 2,492-2,525 ft., shot with 60 qt., pumped 142 bbl.

Carter Brothers moved in rotary tools into the old Siggins pool in Cumberland County to drill No. 1 Harry Howe, 625 ft. from the north line and 640 ft. from the west line of NE Section 24-10n-10e. While there is no definite information it is presumed that they will test deeper horizons than the regular field pay. Allen and others moved into an old gas field in Clark County and their No. 1 Morgan, 225 ft. from the north line and 50 ft. from the west line of NE Section 31-10n-13w of the second principal meridian, was drilling below 501 ft. with cable tools.

Henderson and others made a location for No. 1 Breitenbach, 300 ft. from the north and west lines of SW SE Section 13-9n-4w, Montgomery County.

In Lawrence County Bell Brothers were rigging up rotary for No. 1 Wampler, C SE NW Section 27-5n-11w. It is a Devonian lime test.

Pure Oil Co. has the first showing of oil in Benoist sand in the Clay City pool in No. 1 Ross Travis, C E½ SE NW Section 32-3n-8e, an old well plugged back from 3,068 ft. to 2,866 ft. The well pumped 14 bbl. of oil in 11½ hours from Benoist at 2,870-75 ft. The crew continued to test.

In Schuyler County Thompson and others were rigging up machine for No. 1 Eaton, SW NW SW Section 6-2n-3w of the fourth principal meridian.

In Wabash County L. Leighty's No. 1 Litherland, NW cor. SW NW Section 8-1n-12w, a wildcat, had Biehl sand at 1,518-49 ft. Oil rose in the hole 150 ft. The sand was shot with 40 qt. at 1,531-51 ft. and the crew was cleaning out.

In White County Southern Petroleum Co. made a location for No. 1 Pollard, NE NE SE Section 29-3s-9e, and Leo Horton and others had rig up for No. 1 Schoerman, 572 ft. from the south line and 330 ft. from the west line of SW Section 35-3s-9e, on a Sun Oil Co. farmout.

In Coles County Carter Oil Co.'s No. 1 Seaman, was at a total depth of 4,908 ft., with base of the St. Peter sand at 4,796 ft. Seven-inch casing was set at 3,386 ft. and the company will perforate and test upper horizons.

In Washington County Magnolia Petroleum Co.'s No. 1 Bonczyk, SE SE SE Section 32-3s-2w, was drilling at 645 ft.

In Shelby County Walker's No. 1 Odell, C E½ SE NW Section 20-14n-2e, was busy with a fishing job, total depth 1,900 ft.

In Edgar County Nima Oil Co.'s No. 1 Landers, C SW SE Section 11-12n-11w, was cleaning out at 740 ft.

In Clark County Snavely's No. 1 Scholfield, SE NE SE Section 6-11n-11w, had sulfur water at 2,243 ft. and a hole full of water at 2,265 ft. and was shut down at 2,307 ft. to await owners' orders. Harr & Hawley's No. 1 Pinnell, SE NW SE Section 6-11n-14w, was drilling at 580 ft. Allen & Sherritt, NW NW SW Section 9-11n-14w, topped Trenton lime at 2,275 ft. and was at a total depth of 2,365 ft., with a showing of oil through 2,000 ft. of water a little below 2,360 ft., in the Trenton. Harvey and others' No. 1-B Phillips, NW NE NE Section 18-11n-14w, was drilling at 1,070 ft. Snavely's No. 1 Freeman, NE cor. SE NW Section 4-8n-11w, drilling at 1,460 ft.

In Montgomery County Jack Brown's No. 1 Lipe, SW SW SE Section 28-10n-3w, was at a total depth of 965 ft., and running 8-in. casing.

In Shelby County Turner's No. 1 Hoagland, NW NW SW Section 14-9n-4e, will run 5-in. casing, total depth 1,660 ft.

In Peoria County Blue Bell Oil Co.'s No. 1 Kyle, NW SW NW Section 17-8n-6e of fourth principal meridian, shut down at 1,000 ft. after running a Schlumberger test.

In Jersey County Eagleton's No. 1 Schaeffer, NE NE SE Section 7-7n-10w, was abandoned at 810 ft.

In Hancock County Emery & King's No. 1 Host, SE NE NE Section 23-7n-5w of fourth principal meridian, was drilling at 710 ft.

In Fayette County Albert B. Green's No. 1 McDonald, NW NE NW Section 23-7n-1e, was drilling at 1,000 ft.

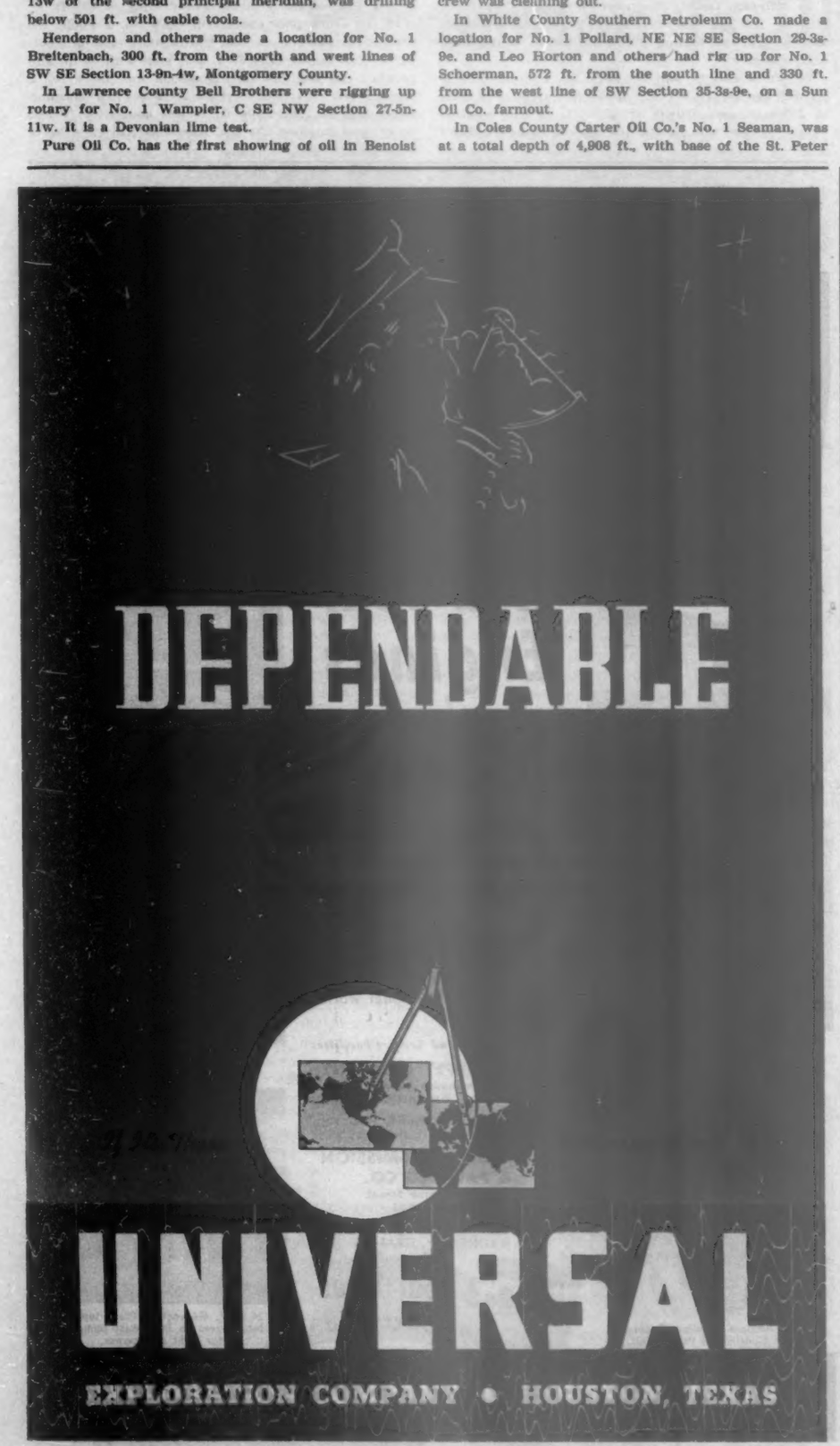
In Bond County W. E. Henderson's No. 1 Hargood, NE NE SW Section 36-7n-4w, was drilling at 450 ft. Central States and others' No. 1 Rich, NE NE SW Section 28-6n-4w, had Devonian lime top at 1,842 ft., pay at 1,875-82 ft., total depth 1,882 ft. The hole filled 1,500 ft. with sulfur water and a good showing of oil and the fluid level could not be lowered more than 800 ft. by swabbing. A squeeze job was run in an effort to shut off the water. Casing was set at 1,865 ft.

In Crawford County La Salle Drilling Co.'s No. 1 Wall, SW NW NE Section 9-6n-13w, Ste. Genevieve lime topped at 1,465 ft., drilling at 1,625 ft. Dorning & Leaser had rig up for No. 1 Ducommum, C N½ NW NW Section 31-6n-12w.

In Clay County W. C. McBride, Inc.'s No. 1 Landreth, NW NW NE Section 27-5n-5e, was coring at 2,286 ft. It had a small showing of oil at 2,167-70 ft.

In Jasper County Pure Oil Co.'s No. 1 Varner B, C E½ NW SW Section 30-5n-10e, had pay at 2,855-60 ft., total depth 2,910 ft. the crew was getting ready to set casing. Pure's No. 1 Redman, C E½ NW NW Section 16-5n-10e, was drilling at 2,120 ft.

(Continued on Page 218)



INDIANA

EVANSVILLE, Ind., Apr. 22.—Three oil wells, one gas well, and eleven dry holes made up the record of a week's completions in Indiana. Gibson County had two completions in the Griffin field and four wildcat dry holes. Spencer County showed a 40-bbl. well, a gas well, and a dry hole, and Posey, Owen, Dubois, Knox, Daviess, and Pike counties each had a wildcat failure. New work failed to keep up with completions.

Posey County

In Posey County Sun Oil Co.'s No. 3 Miller unit, NW SE SW Section 1-7s-12w, was at a total depth of 1,873 ft., with 5½-in. casing set at 1,842 ft. Tar Springs sand was topped at 1,856 ft. The well had a showing of oil in the Waltersburg sand at 1,775-95 ft. Nash, Redwine and others' No. 1 Woods unit, NE SW SW Section 1-7s-12w, was running casing, total depth 1,881 ft. Somers & Egan were drilling at 2,165 ft. in No. 4 Keck, NW NW SE Section 34-3s-14w. Roberts Brothers' No. 5 Keck, C E½ W½ NW Section 34-3s-14w, was shot with 20 qt. at 2,796-2,806 ft., total depth. The bailer was lost in the hole and the crew was fishing. John Lindas abandoned No. 1 Seibert, NE cor. SE SW Section 19-6s-12w, at 402 ft.

McBride, Shirley and others' No. 1 Keck, SW cor.

NE NE NW Section 34-3s-14w, was shot with 20 qt. at 2,150-59 ft., ruining the casing. The hole was reported abandoned.

Spencer County

In Spencer County Ray Johnson made a location for No. 1 Powell, NW cor. SW SW Section 28-6s-7w.

Ohio Oil Co.'s No. 1 Holtzman, NE SE SE Section 28-4s-4w, topped Devonian lime at 2,175 ft.; had a small showing of oil at 2,237½-42½ ft. and drilled to 2,562 ft. where the hole was abandoned as dry.

Rogers and others were drilling at 600 ft. in No. 1 Miller, SE SE SW Section 32-6s-7w, Enterprise pool. Snell and others' No. 1 Crowder, NW SW NW Section 7-7s-7w, had sand at 1,045-48 ft.; oil rose in the hole 600 ft. and the sand will be shot. Damron Brothers' No. 2 Kopp, SE cor. NW NE NE Section 19-7s-6w, in the Rockport gas field, had sand at 928-34 ft., and the well produced 23,000,000 cu. ft. of gas a day. Sturbois and others' No. 3 Boyd, SE NE NE Section 31-7s-6w, was spudded after their No. 2 Boyd was completed as a 40-bbl. producer from sand at 918-23½ ft. The well also produces 5 bbl. of water. No. 2 is in SW NE NE Section 31. Walter Duncan made a location for No. 1 Miller, NE SW NE Section 31, a southwest offset to No. 2 Boyd. L. M. Steele and others' No. 1 Frank, NW NW SE Section 30-7s-6w, was spudded. Kentucky Natural Gas Co.'s No. 2 Scamahorn, C SE NW Section 29-7s-6w, was drilling at 766 ft.

In Dubois County Beyers, Borden and others' No. 1 Schultz, C N½ SE NE Section 5-2s-3w, was drilling at 301 ft. Indiana-Illinois Producing Corp.'s No. 1 Schipp was dry and abandoned at 1,050 ft.

Gibson County

In Gibson County Dee Brothers' No. 1 Chappelle, SW NW SE Section 19-1s-10w, a wildcat, was dry and abandoned at 1,250 ft.

Walter J. Whitcomb had rig up to deepen No. 1 Meade, SE SE SW Section 12-1s-10w, Union pool, from 1,462 ft. Newton Pipe Line Co. was fishing at 1,547 ft. in No. 2 Carruthers, NW cor. SE SE SE Section 26-1s-10w.

W. C. McBride, Inc., had rig up for No. 1 Blair, SE cor. SE NW Section 13-2s-12w. A. L. Braden and others had spudded No. 1 Knight, NE SW SW Section 2-2s-11w.

Sloss & Walls' No. 1 Oakland City College, NW cor. NE SE Section 13-2s-9w, was abandoned. St. Louis lime was topped at 1,725 ft., but was drilled to 1,773 ft. The hole had filled with water at 1,655-73 ft.

L. B. Jackson and others were rigging up machine for No. 1 Sampler, NW NW SW Section 23-2s-9w. A. J. Walker's No. 1 Schmidt, NW NE NW Section 24-3s-9w, had a dry sand at 957 ft. The crew was fishing for tools at 979 ft.

C. W. Sowell and others' No. 1 Schoonover, SW NE SW Section 13-3s-9w, was dry and abandoned at 1,018 ft. S. M. Kernan's No. 1 Brown, C E½ NW SE Section 12-3s-9w, was spudded.

Joe Bander and others' No. 31 Cooper, SE cor. SW SE Section 13-3s-14w, Griffin pool, pumped 128 bbl. a day after a shot in sand at 2,490-2,508 ft., and was completed. Papoose Oil Co.'s No. 4 Cooper A, NW SW SW Section 13-3s-14w, flowed 210 bbl. naturally in 16 hours from pay at 2,476-84 ft. and 2,496-2,507 ft., total depth, and was completed. Continental Oil Co. spudded No. 4 Kleiderer, SW SE SW Section 26-3s-14w.

Spitznagle & Moore's No. 2 Heston, SE cor. SW NE Section 8-3s-13w, total depth 2,800 ft., was plugged back to 2,100 ft. but it was abandoned as dry without a test.

Cherry & Kidd and others were drilling at 1,810 ft. in No. 1 Dunn, SE SW NE Section 17-3s-13w, Obermyer and others' No. 1 Kleiderer, SE SE SE Section 28-3s-14w, had Aux Vases sand at 2,775-88 ft., total depth, and was rigging up machine to drill plug after setting 5½-in. casing at 2,765 ft. Papoose Oil Co. made a location for No. 6 Cooper A, NW NW SW Section 13-3s-14w.

Northern Wildcats

In Lagrange County J. W. Hunt's No. 1 Babcock, SW cor. NE Section 13-37n-9e, was shut down for orders at 1,100 ft.

In Newton County Vaughn & Smith's No. 1 Yacuk,

(Continued on Page 211)

EASTERN KENTUCKY

ASHLAND, Ky., Apr. 22.—Two oil-well completions are included in the report of drilling activities in the eastern Kentucky field this week.

Kentucky-West Virginia Gas Co.'s No. 582 B. F. King, on Joe King Branch in Knott County, total depth 3,361 ft., in white slate, started at 195,000 cu. ft. of gas daily.

Inland Gas Corp.'s No. 212 W. R. Smith and others, on Perkins Branch in Knott County, total depth 3,071 ft., in brown shale, is making 249,000 ft. of gas daily.

In Floyd County Kentucky-West Virginia Gas Co. is drilling at 1,897 ft. in No. 585 A. C. Webb, on Sanson Fork of Prater Creek. Same company is down 1,168 ft., in Salt sand, in No. 586 Levi Mitchell, on Mitchell Branch of Mud Creek, and is drilling at 325 ft. in slate, in No. 5262 W. R. Hall, on Jacks Fork of Left Beaver; is drilling at 2,736 ft., in shale, in No. 5253 George McKinney, on Deadening Fork of Toler Creek, and at 872 ft., in sand, in No. 587 John Campbell, nearby.

In Martin County Kentucky-West Virginia Gas Co. is down 2,270 ft., in Big lime, in No. 583 Wilson Short, on Rockcastle, and was spudding No. 5265 J. G. Carlise, on Cassady Branch.

In Knott County Kentucky-West Virginia Gas Co. was drilling at 1,364 ft., in Salt sand, in No. 584 Jeffie Hall, on Isaac Fork of Right Beaver Creek. Same company

(Continued on Page 223)

OHIO FIELDS

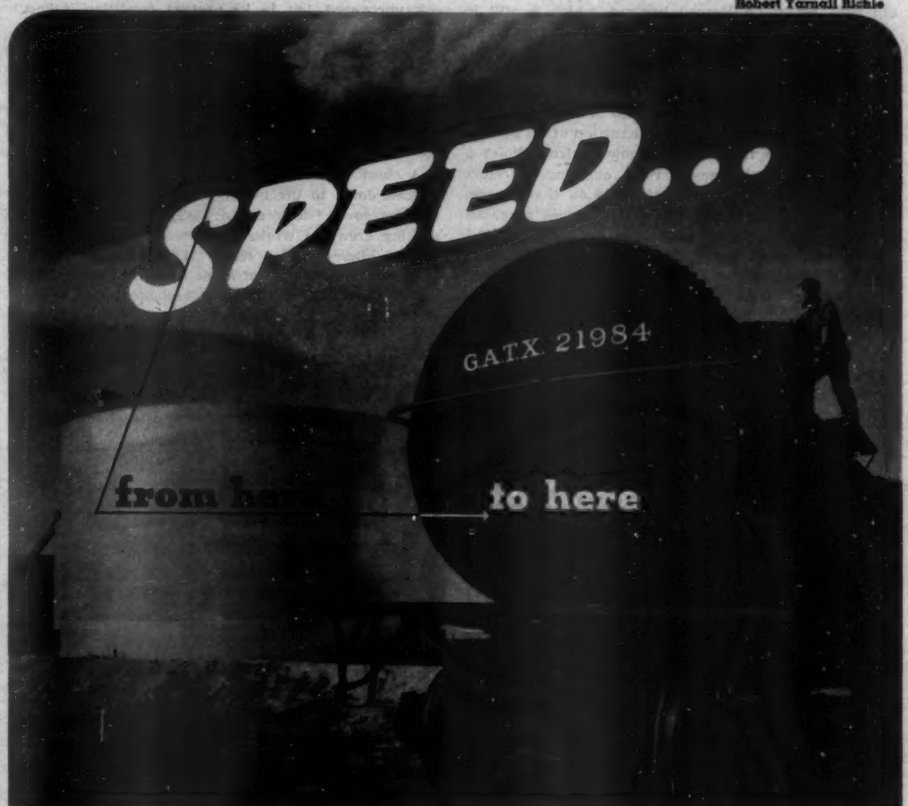
MARIETTA, Ohio, Apr. 22.—Eighteen completions were reported in the past week in the Ohio fields covered by this report, eight gas wells, four oil wells, and six dry holes.

In southwestern Ohio Sun Oil Co. was dry at 314 ft. below the Trenton rock. The test was drilled in Green County, Caesars Creek Township, Survey 2473, on the Dr. William M. Henry tract. The Trenton was found at 1,141-1,644 ft., with the "Green sand" at 1,644 ft., no oil or gas was found, some water was showing.

In Central Ohio, Muskingum County, Atha Co.'s No. 1 Philip Keffer, Section 14, in Hopewell Township, was

(Continued on Page 225)

Robert Yarnall Richie



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California Field Report

By
L. P. STOCKMAN

Deeper Drilling Under Way To the New Montebello Zone

LOS ANGELES, Calif., Apr. 22.—Of outstanding importance in California is the starting of extensive deep-zone development in the Montebello field of Los Angeles Basin where Mono Oil Co. and Kern Oil Co., Ltd., on formation tests confirmed the existence of a virgin zone below La Merced horizon, which is still in a flush condition and which, because of a greatly expanded gas cap, shows an abnormally high gas-oil ratio. The rush, which has already started several wells headed down to the new 8-3 zone discovered by Union Oil Co. more than a year ago in No. 30 La Merced, is not due to depletion or exhaustion of La Merced zone, but to the fact that the new horizon shows a much more favorable gas-oil ratio, enabling operators to produce a larger amount of crude oil than is possible under existing conditions in La Merced zone. All indications point to the probability that the new 8-3 zone will be rather limited in areal extent and smaller than the sixth, seventh, and eighth-zone areas. Also of importance is the fact that crude-oil production in the state for the first 20 days of April averaged about 7,000 bbl. per day in excess of the daily average for the same time in March. This is the first time in several months that production has shown a tendency to increase.

Current production of leading California fields follows:

	Barrels
Wilmington	83,725
Midway-Sunset	51,725
Kettleman Hills	47,100
Long Beach	45,000
Coalinga	26,525
Ventura Avenue	31,650
Huntington Beach	28,100
Santa Fe Springs	25,850
Montebello	21,210
Santa Maria Valley	17,450

Montebello Deep Zone

The new deep zone in the Montebello extension while not as extensive as La Merced zone will probably result in increased production within the next 30 days. Operators producing from La Merced zone are restricted with respect to production of gas with the result that crude-oil production is restricted. The new zone has a normal gas-oil ratio and the same amount of gas from this new zone will produce more crude oil than the same amount of gas allocated to La Merced zone. No. 1 Foreman of Mono Oil Co., one of the wells that confirmed the existence of the new 8-3 zone at Montebello, was deepened to the new zone at 7,840 ft. and on a formation test at 7,352-7,840 ft. flowed at the rate of 1,200 bbl. of 36.1-gravity oil and 750,000 cu. ft. of gas per day. Production was immediately ceased and preparations made to run in a liner and produce from this zone.

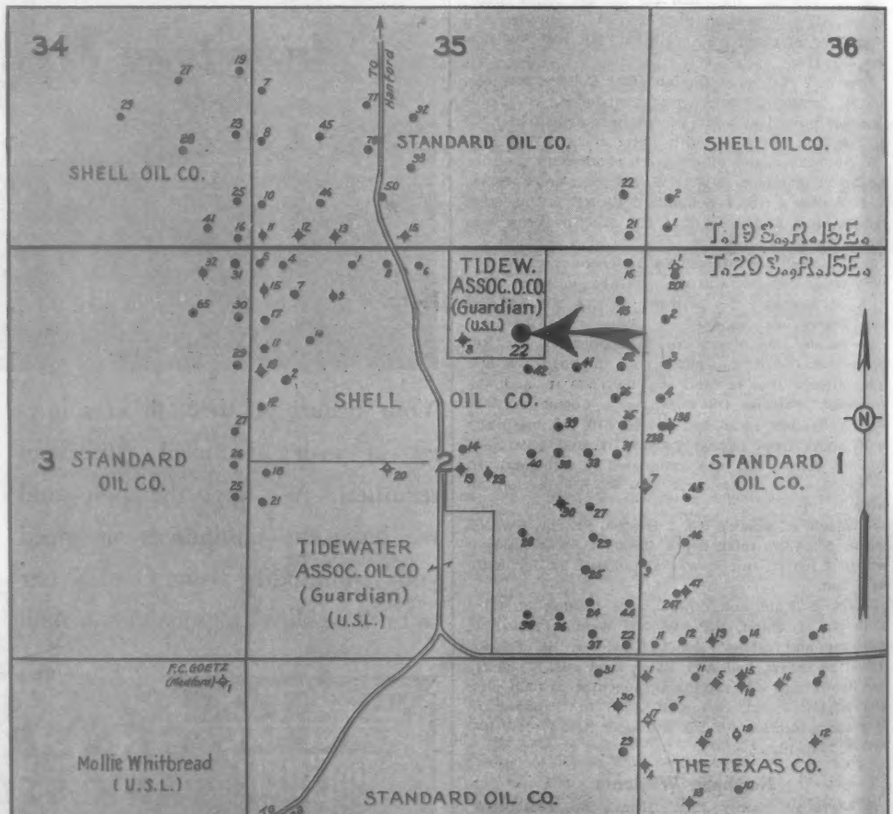
No. 38 Monterey, which also had drilled to the 8-3 zone, was deepened to 7,789 ft. and on a formation test of the interval between 7,580 ft. and bottom flowed at the rate of 1,850 bbl. of 35.8-gravity oil and 930,000 cu. ft. of gas daily. R. R. Bush Oil Co. found the 8-3 zone wet in the west end of the field. No. 2 Mihlfred was the outpost that found only water in the new zone. It was plugged back from 8,431 ft. to 7,683 ft. and completed in La Merced zone flowing 225 bbl. of 36.1-gravity oil cutting 6 per cent, and 700,000 cu. ft. of gas daily. No. 1 Mihlfred cored top of the 8-1 zone at 7,446 ft. and found all the formation below La Merced zone to consist of a gray sand and shale and definitely wet.

The new 8-3 zone is not expected to show a high recovery per acre but it will permit several companies to substantially increase their oil production. It will likewise reduce production of gas in the field as a whole, as wells are killed in La Merced zone and deepened to the new pay. The 8-3 zone is approximately 80 ft. thick and, based on limited data available at present, consists of about 20 per cent oil sand. Only two zones in the Montebello field have shown a crude-oil production worth considering. These are the Masser and La Merced zones. The latter is by far the best yet uncovered, but in its present condition it hardly justifies exploitation as the high gas-oil ratio mitigates against production of crude oil. Operators have been operating under provisions of a temporary injunction for nearly a year and as long as total gas production is in excess of pipe-line outlets operators are obliged to limit gas production to that allocated by the Superior Court.

A check in the field indicates that 15 wells will be headed down to the new 8-3 zone within 10 days. At present seven wells are actually headed down with drilling crews at work. These wells are No. 1 Drake of Brookline Oil Co.; No. 1 Masser of Herley-Kelly, Inc.; No. 2 Montebello of Montebello Reservoir Oil Co.; No. 3 Montebello of United Montebello Oil Co.; No. 43 of J. C. Mabee Co., and No. 1 Wallace-Farish and No. 1 Wallace-Nordon of Montebello Oil Co. During the early part of the week Kern Oil Co., formerly St. Helens Petroleum Co., completed No. 34 Monterey flowing 593 bbl. of clean 35.9-gravity oil and 19,41,000 cu. ft. of gas daily from La Merced zone with bottom of the hole at 7,805 ft. This new well, which was brought in flowing through a 96/64-in. bean and showed a tubing pressure of 200 lb. and a casing pressure of 700 lb., was finished with a 7-in. water string cemented at 7,665 ft. and perforated at 7,523-7,635 ft. with a gun perforator. The 7,657 ft. of 2½-in. tubing had a packer at 7,644 ft. and an Otis valve at 7,611 ft. The high gas-oil ratio indicates the high ratio of wells producing from this horizon and also indicates why operators having high gas-oil-ratio wells in La Merced zone will not lose any time in deepening to the 8-3 zone.

Kettleman Hills

Three excellent wells were completed in the Kettleman North Dome field during the week, one of which was completed in the Eocene flowing 974 bbl. of clean 50.5-gravity oil and 12,000,000 cu. ft. of gas per day. This was No. 72-19-J of Standard Oil Co. in Section 19-21-17. Top of the brown shale was logged at 6,317 ft., top of the Temblor was cored at 7,644 ft., and top of the productive Avenal zone of Eocene age was found at 10,549 ft. No. 72-19-J is located in the Huffman section of the field far out on the western end of the structure. The high gas-oil ratio is characteristic of the Avenal zone and was responsible several



Tide Water Associated Oil Co. recently completed No. 22 Guardian in the old East Coalinga field of Fresno County, California, flowing 1,450 bbl. daily and the unexpectedly large production will probably lead to offset drilling by Standard Oil Co. and Shell Oil Co., Inc.

months ago for Kettleman North Dome Association proposing a unification of drilling and producing activities in order to conserve gas and at the same time reduce drilling operations and enhance ultimate production of crude oil. Up to date most of the Eocene development has been concentrated in the western end of the structure but for several months there has been a tendency to move eastward with the result that Standard Oil Co. has completed an Eocene well in the very center of the field. The Avenal zone of Eocene age in the Kettleman North Dome field is the equivalent of the Gatchell zone of the same age in the Northeast and Southeast Coalinga fields located a few miles to the west of Kettleman Hills. The Gatchell zone in the Southeast Coalinga field does not show the same high gas-oil ratios as Kettleman Hills but the Northeast Coalinga field is comparable with the Kettleman North Dome, both with respect to the quality of oil produced and large volume of gas produced along with the crude.

Kettleman North Dome Association, or "Kenda," completed two wells. No. 34-22-Q in Section 22-22-18 was brought in flowing 775 bbl. of 33.3-gravity oil along with 400,000 cu. ft. of gas per day from the Temblor at 7,775 ft. and No. 6-26-Q in Section 26-22-18 was finished flowing 1,224 bbl. of clean 32.6-gravity oil and 1,674,000 cu. ft. of gas daily from the Temblor with bottom of the hole at 8,250 ft. Both were brought in flowing through 2-in. beans but these were reduced immediately after completion. Perforations open opposite the oil sand were at intervals between 7,163 ft. and 8,209 ft. Top of the brown shale was cored at 5,119 ft. and top of the Temblor was found at 6,441 ft. Kenda should have a new Eocene age well ready for a production test within 2 weeks as No. 334-18-J in Section 18-21-17 is down 10,905 ft.

Coalinga

Superior Oil Co., one of the most progressive independent operators in California, completed No. 4 Husong in the Northeast Coalinga field of Fresno County flowing 1,208 bbl. of 26.7-gravity oil and 940,000 cu. ft. of gas per day from the Gatchell sand with bottom of the hole at 8,255 ft. It flowed through a 28/64-in. bean behind a tubing pressure of 1,085 lb. and a casing pressure of 2,950 lb. Due to the productivity of wells in the Northeast and Southeast Coalinga fields, wells are not allowed to establish potentials and only permitted to produce until they clean up. For this reason, the initials of wells in both of these fields only represent a part of the productive capacity. Top of the Kreyenhagen was found at 6,843 ft., top of the glauconitic was logged at 7,832 ft. and top of the productive Gatchell was cored at 7,953 ft. The crew was moved to No. 5 Husong.

In the Southeast Coalinga field, Universal Consolidated Oil Co. is getting ready to spud No. 72-24-C in Section 24-20-15, in the extreme southern end of the field. This company's last completion on this property was No. 61-24-C, which was completed flowing 190 bbl. of clean 29.5-gravity oil and 350,000 cu. ft. of gas per day through a 9/64-in. bean from a depth of 8,063 ft. This well unlike most other completions was not permitted to build up as the oil was turned to tanks within an hour after completion. Top of the Kreyenhagen was found at 6,412 ft., top of the glauconitic was logged at 7,600 ft. and top the productive Gatchell was cored at 7,715 ft. Standard Oil Co. completed No.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	April 14		April 7			
	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Intercoastal-domestic—						
Crude oil	.....	.....	.....	.....	72,220	185,791
Fuel oil	.....	.....	.....	.....	152,798	593,766
Diesel and gas oil	.....	.....	.....	.....	.....	163,501
Gasoline	.....	.....	.....	.....	751,841	353,996
Kerosene	.....	.....	.....	.....	.....	122,200
Foreign exports—						
Crude oil	122,613	17,516	64,066	9,152	3,681,407	4,021,684
Fuel oil	304,928	43,561	127,874	18,268	2,330,436	2,361,150
Diesel and gas oil	172,308	24,615	80,769	11,538	1,934,974	1,523,223
Gasoline	58,231	8,319	172,284	24,612	1,484,194	2,263,495
Kerosene	40,641	5,806	25,513	3,645	354,627	584,941
Lubricants	.....	.....	.....	.....	40,698	42,034
Coastwise-domestic—						
Crude oil	200,706	28,672	261,393	37,342	2,962,908	3,620,169
Fuel oil	463,135	66,162	220,622	31,517	4,559,719	2,727,181
Diesel and gas oil	35,266	5,038	106,446	15,207	917,967	781,503
Gasoline	337,510	48,216	558,380	79,769	4,493,091	3,968,411
Kerosene	25,080	3,583	4,333	619	150,412	129,005

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Fuel oil	.....	.....	.....	.....	68,740	
Diesel and gas oil	.....	.....	.....	.....	281,260	69,550
Asphalt	.....	.....	.....	.....	73,200	140,426
Lubricants	.....	.....	.....	.....	7,606	4,170
Foreign exports—						
Crude oil	153,842	21,977	.....	.....	1,219,791	1,675,974
Fuel oil	28,940	4,134	.....	.....	353,629	885,259
Diesel and gas oil	199,459	28,494	.....	.....	798,034	460,331
Gasoline	125,770	17,967	.....	.....	684,923	893,813
Kerosene	57,621	8,232	.....	.....	160,550	269,339
Lubricants	948	135	.....	.....	95,465	163,196
Other finished oil	.....	.....	.....	.....	250	120
Coastwise-domestic—						
Fuel oil	68,212	9,745	155,086	22,155	1,754,716	1,831,597
Diesel and gas oil	.....	.....	10,212	1,459	327,364	252,243
Gasoline	131,008	18,715	169,160	24,166	2,149,739	1,735,522
Kerosene	20,595	2,942	9,755	1,394	180,438	199,832

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42-19-F in Section 19-20-16 at 8,029 ft. with a 7-in. water string cemented at 7,450 ft. and a 5-in. combination liner. It will be tanking oil early this week.

Rio Bravo

Superior Oil Co. completed No. 3 Smith, in the central part of the Rio Bravo field of Kern County, flowing 1,536 bbl. of 38.5-gravity oil and 1,685,000 cu. ft. of gas per day from the Rio Bravo zone with bottom of the hole at 11,490 ft. Production was brought in flowing through a 32/64-in. bean behind a tubing pressure of 1,225 lb. and a casing pressure of 1,775 lb. No. 3 Smith, located in Section 34-28-25, was finished with a 7⅝-in. water string cemented at 11,270 ft. and 238 ft. of drillable liner landed at 11,490 ft. and carrying 120-mesh perforations at 11,273-11,490 ft. The tubing was 10,498 ft. of 2½-in. Top of the productive Rio Bravo sand was cored at 11,270 ft. and top of the lower Rio Bravo or Vedder zone was cored at 11,340 ft. On the Fink lease in Section 27-28-25, in the northwest end of the field, Superior Oil Co. stopped drilling on No. 3 at 11,325 ft. but will probably make a little more hole before putting the well on production. Top of the productive Rio Bravo zone was cored at 11,300 ft. Union Oil Co., discoverer of the Rio Bravo field, is running three strings of tools and should have No. 32-34 Kern County Land in Section 34-28-25 tanking oil within a fortnight.

Greeley

Standard Oil Co. completed a large initial producer in the Rio Bravo sand in the Greeley field of Kern County when No. 11-23 Kern County Land in Section 18-29-26 was brought in flowing 3,550 bbl. of clean 34.9-gravity oil and 2,750,000 cu. ft. of gas per day from 11,510 ft. It was finished with a 7-in. water string cemented at 11,364 ft. and 193 ft. of 4-in. liner landed at 11,509 ft. and carrying 147 ft. of perforated. Production was flowing through 11,491 ft. of 2½-in. tubing. General Petroleum Corp. is running two strings of tools out on the north flank of the Greeley field where it extended the productive limits a few months ago. Superior Oil Co. has swung over to the Merrill lease in Section 1-29-25 and has spudded in its first test on this property. Standard Oil Co. has two wells under way, both of which are in what is considered as proved acreage.

Cole's Levee

Richfield Oil Corp., discoverer of the Tupman section of the Cole's Levee field, is setting a fast pace from a drilling standpoint and at present has six strings of tools in operation and derricks and locations for nine additional wells. The company has budgeted $7,500,000 for drilling operations in California this year and tentative plans call for the drilling of 50 wells during the year and a minimum of 50 in the Cole's Levee field in 1941. The company has allocated $150,000 for the drilling of each well but it is quite likely that the actual cost will average somewhat below this amount. Richfield has about 250 locations available but this may be increased with additional development. Operations are entirely justified as Richfield controls by far the largest amount of productive acreage in the Cole's Levee field. The only other operators working in the field at present are Standard Oil Co. with two strings of tools in operation and Ohio Oil Co. with one well under way.

Midway-Sunset

Two small but commercial wells were completed in the Midway-Sunset field of Kern County. The largest was No. 7 Kendon of Signal Oil & Gas Co. in Section 35-32-23 which was completed pumping 170 bbl. of 14.2-gravity oil cutting 10 per cent from 2,505 ft. National Oil Co. completed No. 36, in Section 35-32-23, pumping 40 bbl. of 12.3-gravity oil per day from the upper zone with bottom of the hole at 1,456 ft.

San Joaquin Basin

In the Mount Poso field of Kern County Bishop Oil Co. successfully completed No. 2 Buchner, in Section 20-26-28, pumping 90 bbl. of 14.2-gravity oil cutting 4 per cent daily from 1,526 ft. and started preparations for early work on No. 3 Buchner in the same section. Top of the productive Vedder zone was cored at 1,509 ft. Western Gulf Oil Co. has stopped the drill on No. 74-3-A Kern County Land, in the Paloma field of Kern County, at 11,220 ft. and will plug back to a little above 10,000 ft., where the log shows a productive interval. On a formation test made during drilling the well flowed at the rate of 850 bbl. of clean 50.1-gravity oil and 35,000,000 cu. ft. of gas daily. The bit was still in the Stevens sand when drilling operations were concluded and consequently the productivity of the possible underlying Rio Bravo and Vedder zones is unknown. It was estimated that it would require another 3,000 ft. of hole to reach the Rio Bravo zone and rather than drill to such a depth in view of present conditions the company decided to produce the zone known to exist higher up in the hole.

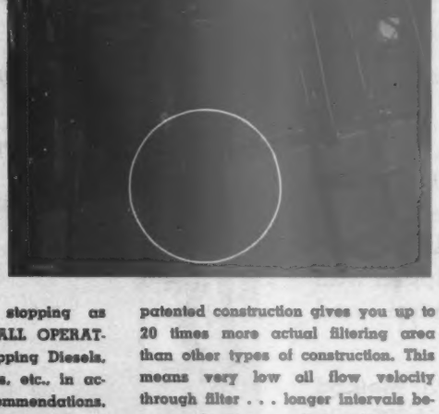
Los Angeles Basin

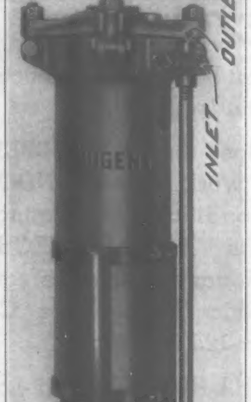
The Hellman estate, operating the Hellman property of I. W. Hellman, deceased, completed another excellent well in the Seal Beach field of Los Angeles Basin when No. 5 Hellman was completed flowing 1,180 bbl. of clean 28.7-gravity oil and 300,000 cu. ft. of gas per day from the Selover zone. This new well was drilled to 5,030 ft. and a 6⅝-in. solid string was cemented at that point. Later the 6⅝-in. was gun-perforated and cemented through perforations at 4,788 ft. and then gun-perforated opposite the productive sand. This is the second good well drilled and completed in the Selover zone by the Hellman estate. Continental Oil Co. has a derrick up for No. 43 Bixby in the Seal Beach field and the well will be completed in the Hellman zone by selective drilling. Allied Petroleum Corp. is apparently not satisfied that the deep zone in the Long Beach field is a dud as it is proceeding with a deep well that is scheduled to test out the lower zone within the next few weeks. No. 34 Signal of Allied Petroleum Corp. secured a satisfactory water shutoff on the 7-in. water string at 9,730 ft. and the bit is at present rotating at 10,070 ft.

Kern Petroleum Corp. (not Kern Oil Co.), which is operating successfully in the Montebello field, has completed No. 3 Signal, in the Long Beach field, pumping 125 bbl. of 22.6-gravity oil per day from 3,623 ft. This new well was finished with a 7-in. water string cemented at 3,552 ft. and 80 ft. of 4¾-in. liner landed at 3,623 ft. and carrying perforations at 3,553-3,623 ft. Southwest Exploration Co. completed another good

SINCLAIR Engine Reconditioning Program Includes NUGENT FILTERS

OPERATORS of engines who have read in this issue of Oil & Gas Journal about the reconditioning program in Sinclair's Natural Gasoline Plant No. 20, Nueces County, Texas, will be interested to know that new Nugent Oil Filters were installed 100% on engines in this plant. The upper picture shows one of the filters on a Cooper-Bessemer compressor. The lower view shows how a veteran Foos gas engine was modernized.





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well in the tideland opposite the Huntington Beach field when No. 26 State was brought in pumping 456 bbl. of clean 25.3-gravity oil and about 25,000 cu. ft. of gas per day from 5,391 ft. This well, which was whipstocked out under the ocean by directional drilling from a surface location on the uplands, was finished with an 8⅝-in. water string cemented at 4,560 ft. and 873 ft. of 6⅝-in. liner landed at 5,391 ft. and carrying perforations at 4,599-5,391 ft. Additional tideland drilling is scheduled to get under way at an early date in the Huntington Beach field as the state recently awarded a contract to another operator.

Shell Oil Co., Inc., completed No. 102 Reyes in the Dominguez field of Los Angeles Basin, flowing 1,053 bbl. of 29.7-gravity oil cutting 10 per cent and 760,000 cu. ft. of gas per day through a 1-in. bean from 7,950 ft. Union Oil Co. has concluded drilling operations on No. 76 Callender at 7,565 ft.

Indiana Fields

(Continued from Page 207)

SW SE SE Section 33-32n-8w, was at a depth of 130 ft. and the crew was pulling 6-in. casing to underream.

In Jay County D. Daviess was drilling at 875 ft. in No. 1 Perry, NW NW NE Section 17-24n-12e, Petroleum Development Corp.'s No. 1 Binegar, NE cor. NW Section 29-24n-13e, was drilling at 1,725 ft. It had a hole full of salt water at 1,467 ft.

In Randolph County C. Godwin and others were preparing to acidize No. 1 St. John, C NE NE Section 8-21n-12e. The well had a showing of oil at 1,257-60 ft., total depth 2,175 ft. John Seip was below 802 ft. in No. 1 Johnson, NW NE NW Section 9-19n-13e.

In Fountain County Fountain Oil Co. set pipe at 60 ft. in No. 1 Glasscock, SE SE SW Section 2-18n-8w.

In Marion County White River Oil & Gas Corp. made a location for No. 3 Indianapolis Water Co., 100 ft. from north and 500 ft. from east lines of NE SW Section 15-16n-3e.

In Hancock County D. D. Chaffee's No. 1 Brock, SW cor. NE SW Section 6-16n-6e, was drilling at 836 ft.

In Putnam County C. L. Williams was drilling at 587 ft. in No. 1 Cooper, SE cor. SW SW NE Section 10-13n-4w.

In Vigo County E. J. Renwaldt made a location for No. 1 Hartman, SW NE NE Section 13-11n-9w.

In Sullivan County Forest Oil Corp. was drilling at 1,503 ft. in No. 1 Riggs, NW NE SW Section 33-9n-9w. C. C. Davis had a showing of oil at 747-52 ft. in No. 4 Huff, NW NW NW Section 3-7n-10w, and was cleaning out.

In Owen County Urban Oil Co. abandoned No. 1 Everhart, C S½ NE SE Section 21-9n-5w, at 1,627 ft. It had a small showing of oil in Devonian lime at 1,446¼ ft. but got salt water at 1,529-1,627 ft.

In Decatur County Hoosier Public Utilities Co.'s No. 209 Renny, C SE NW Section 1-9n-9e, was drilling below 200 ft.

In Greene County Schicker & Lyon's No. 1 Kiser, NW NW NW Section 4-7n-5w, topped Ste. Genevieve lime at 343 ft.; had a hole full of water at 698-748 ft., and was drilling at 1,124 ft. after setting 10-in. casing at 761 ft.

In Sullivan County Joe Young and others' No. 1 Shepard, C N½ SE NE Section 13-6n-10w, had Ste. Genevieve lime top at 1,302 ft. and was drilling at 1,343 ft.

In Greene County Commonwealth Oil Co.'s No. 1 Tucker, NW cor. NE SE NE Section 16-6n-6w, was drilling at 574 ft. with Ste. Genevieve lime topped at 475 ft. Sand at 430-65 ft. filled the hole with water.

In Knox County Hart & Williams' No. 1 Montgomery, C NE SW Section 28-5n-7w, was dry and abandoned at 2,261 ft. Newton Pipe Line Co. was drilling at 1,632 ft. in No. 1 Like, C E½ NE Donation 171-2n-9w.

In Daviess County Fred Hartman's No. 4 White, SW NW SW Section 22-2n-7w, was abandoned at 375 ft. after drilling sand from 343 ft. to the bottom.

In Pike County W. H. Meus and others made a location for No. 1 Stone, SW cor. NW NW NW Section 21-1n-7w. Newton Pipe Line Co.'s No. 1 Crow, C NE NE Section 24-1n-9w, was dry and abandoned at 1,704 ft. George W. Miller's No. 1 Nixon, SE SW NE Section 14-3s-8w, a mystery well, was drilling at an estimated depth of 4,050 ft.

In Warrick County S. R. Travis and others' No. 1 Moyer, NW SW NW Section 13-5s-9w, was fishing for tools, total depth 1,632 ft.

In Vanderburg County Vanderburgh Oil Corp.'s No. 11 Hornby, SE NW SW Section 33-5s-10w, was drilling at 1,480 ft.; top of the Menard was at 1,475 ft.

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Kansas Developments

By
DAL DALRYMPLE

Two Bornholdt Areas Linked; Lindsborg Pool Property Sold

The spring revival of field activity in Kansas continued throughout the past week, with more than 50 locations being announced, including several new wildcats. A discovery well was completed in Barton County, and a link well between the Bornholdt and North Bornholdt areas in McPherson County gave further proof that those two pools were producing from a common source. One of the larger business deals of the year was recorded with the sale of Carter Oil Co. properties in the Lindsborg pool, McPherson County.

Republic Natural Gas Co. and others' No. 1 Johnson, CNL NW NW Section 19-20-5w, about midway between production in the two Bornholdt pools, found chat pay at 3,286 ft., and when plugged in 7-in. casing was drilled to 3,301 ft., oil flowed into the pits, accompanied by considerable gas. Estimates of production ranged as high as 200 bbl. an hour, although no accurate gage was made before shutting the well in for tankage.

Sale of Carter Oil Co.'s block and production in the Lindsborg pool to the M. & L. Oil Co. was announced. The sale includes two Viola lime wells with daily potential of 650 bbl. of oil, and a lease block of 3,200 acres adjoining the town of Lindsborg. The acreage, in Sections 4 to 9 and 16, 17, 18-17-3w, and in Sections 12 and 13-17-4w, was assembled 3 years ago, following a seismograph survey of the area by the Carter company. The Lindsborg discovery well was completed December 30, 1937, at Carter Oil Co.'s No. 1 Hoglund, C W½ SW NW Section 8-17-3w, for initial output of 345 bbl. of 35.5-gravity oil from Viola lime at 3,373-3,484 ft. Officials of the M. & L. Oil Co. at Wichita announced they planned to begin a development program on the lease block late this spring.

Russell County

Sinclair Prairie Oil Co.'s No. 2 Sellens, NE SW SW Section 15-15-13w, North Fairfield area, Russell County, pumped 200 bbl. of oil in 8 hours, was acidized and potential calculated at 1,391 bbl. It had Arbuckle lime at 3,329-33 ft., total depth.

W. L. Southern, Inc.'s No. 1-A Berrick, C S½ SW SE Section 6-15-13w, Coralena pool, pumped 6 bbl. of oil and 3 bbl. of water in 8 hours and was abandoned at total depth of 3,291 ft.

Coralena Oil Co.'s No. 8 Dumler, NW SW NW Section 36-15-14w, Trapp field, topped Arbuckle lime at 3,334 ft., was bottomed in lime at 3,339 ft., pumped 54 bbl. of oil in 4 hours and made daily potential of 161 bbl.

Gulf Oil Corp.'s No. 1 St. Aubyn, NE cor. Section 1-15-15w, South Big Creek area, found Arbuckle lime at 3,215-24 ft., total depth, pumped 16 bbl. of oil and 112 bbl. of water in 8 hours, making daily potential of 48 bbl. of oil, with 336 bbl. of water.

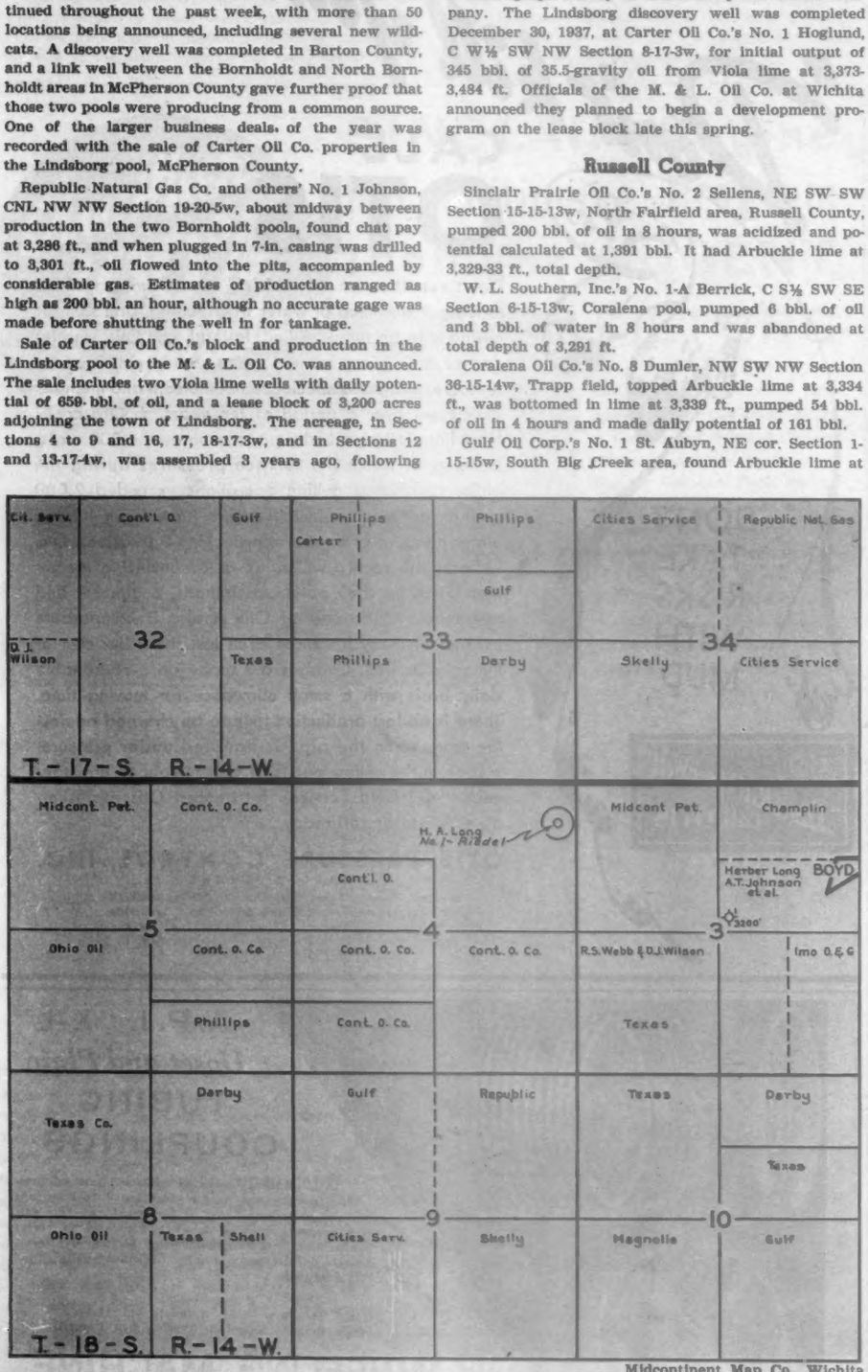
C. B. Davis' No. 4 Gaynor, C N½ SE NW Section 19-13-14w, Atherton area, pumped 8 bbl. of oil an hour from Arbuckle lime at 3,163-70 ft., total depth, was acidized and completed for maximum potential of 3,000 bbl.

Stanolind Oil & Gas Co.'s No. 4 Rein, C S½ SW NW Section 25-14-14w, Gurney pool, had Lansing lime at 2,910-15 ft., was bottomed at 3,233 ft., acidized, pumped 234 bbl. of oil in 8 hours and made potential of 704 bbl. of oil daily.

Skelly Oil Co.'s No. 1 Driscoll, C E½ NE SW Section 27-14-14w, pumped 505 bbl. of oil in 8 hours from Lansing lime at 2,949-96 ft., total depth, and made 24-hour potential of 1,515 bbl.

Alva Billings' No. 4-A Herbel, NW NE NW Section 35-14-14w, had Gorham sand at 3,171-74 ft., total depth 3,177 ft., pumped 751 bbl. of oil in 8 hours and made daily potential of 2,254 bbl., with no water.

New work in Russell County: Stanolind Oil & Gas Co.'s No. 1 Hefferman, C N½ NW NE Section 4-15-13w, location; Skelly Oil Co.'s No. 10 Rein, C S½ NW SE Section 8-15-13w, location; Coralena Oil Co.'s No. 8 Sellens, SE SW SE Section 20-15-13w, rigging rotary; W. I. Southern, Inc.'s No. 5 Trapp, NE NW NE Section 29-15-13w, location; Cities Service Oil Co.'s No. 3-A Tittle, C W½ SE SW Section 12-15-14w, drilling below 175 ft.; Coralena Oil Co.'s No. 9 Dumler, C S½ S½ NW Section 36-15-14w, rigging up rotary; Skelly Oil Co.'s No. 2 Driscoll, NW NW SW Section 27-14-14w, location.



Midcontinent Map Co., Wichita

Another attempt is being made to find oil near the village of Boyd in Barton County. H. A. Long's No. 1 Riedel, C E½ NE NE Section 4-18-14w, wildcat northeast of the abandoned discovery well of the Eveleigh pool in SW SW NE Section 3-18-14w, was a cable-tool rig

Estimated Daily Production

Estimated daily production for Kansas for the week ended April 20, and for the preceding week was as follows:

	Barrels	
	Apr. 20	Apr. 13
Oxford City	800	700
Burrton	8,100	8,350
Ritz-Canton	4,050	4,100
Graber	2,850	2,750
Hollow-Nikkel	1,750	1,800
Lerado	700	1,050
Voshell	1,500	1,550
Wellington	1,800	1,750
Ellsworth County:		
Lorraine	1,800	1,700
Other pools	1,790	2,520
Rice-Barton counties:		
Bloomer	4,000	5,100
Chase	3,650	5,450
Geneseo	2,300	4,800
Raymond	250	650
Silica	11,650	14,500
Keesling	800	600
Wherry	3,650	4,000
Miscellaneous Rice	350	1,040
Miscellaneous Barton	3,215	10,165
Trapp district	12,150	14,250
Balance Russell County	16,950	19,500
Sedgwick County	3,300	3,400
Ellis County:		
Bemis	7,500	7,900
Miscellaneous	6,755	5,260
Kingman County	870	1,000
Stafford County	7,045	6,675
Greenwood County	7,950	8,100
El Dorado	7,300	7,250
Other fields	31,075	30,490
Total Kansas	160,900	176,400

Barton County

Shell Oil Co., Inc.'s No. 9-B Bitter, SE NW SE Section 6-16-13w, Trapp field, Barton County, swabbed 110 bbl. of oil in 3 hours; was acidized, swabbed 170 bbl. in 4 hours and potential was calculated at 2,975 bbl. It had Arbuckle lime at 3,346-54 ft., total depth.

Stanolind Oil & Gas Co.'s No. 23 Panning, NE SE SW Section 10-20-11w, Silica field, had Arbuckle lime at 3,277-84 ft., total depth, swabbed 98 bbl. of oil in 5 hours, and was completed for maximum allowable potential of 3,000 bbl.

Derby Oil Co.'s No. 6 State, SW SW SE Section 11-

20-11w, found Arbuckle lime at 3,282-88 ft., was bottomed at 3,292 ft., swabbed 94 bbl. of oil in 4 hours and daily potential was calculated at 1,182 bbl.

Indian Territory Illuminating Oil Co.'s No. 3 Burchart, SE SW SW Section 11-20-11w, found Arbuckle lime at 3,281-91 ft., total depth, pumped 121 bbl. of oil in 8 hours and made potential of 365 bbl. daily.

Derby Oil Co.'s No. 5 State, NW NE NE Section 14-20-11w, was completed for an estimated 120 bbl. of oil daily from Arbuckle lime at 3,273-95 ft., total depth.

Magnolia Petroleum Co.'s No. 1 Smith, C W½ SW SE Section 1-18-11w, Bloomer field, found Arbuckle lime at 3,315 ft., nothing was showing and it was dry and abandoned at 3,320 ft., total depth.

Crown Petroleum Co.'s No. 1 Krueger, C E½ SE SE Section 14-20-12w, Marchand area, was completed for 72 bbl. of oil daily at total depth of 3,364 ft., in Arbuckle lime.

First reports of new activity in Barton County: Shell Oil Co., Inc.'s No. 11-B Bitter, NW SW SE Section 6-16-13w, set casing and was waiting on cement at 663 ft.; Pope & Klink's No. 1 Campbell, C N½ NW SE Section 11-19-15w, cellar; Lario Oil & Gas Co. and others' No. 4-A Zahorsky, C N½ NW NE Section 23-20-11w, building rotary rig; Indian Territory Illuminating Oil Co.'s No. 6 Schrepel, C N½ N½ NE Section 26-20-11w, rigging up rotary; Vickers Petroleum Co.'s No. 1 Valenta, C E½ NE NE Section 31-16-11w, rigging up rotary.

Ellis County

Cities Service Oil Co.'s No. 11 Collohan, NE SE NW Section 24-11-17w, Bemis field, Ellis County, penetrated Arbuckle lime from 3,413 ft. to 3,418 ft., total depth, oil rose 2,200 ft. in the hole in 1 hour, it was acidized and completed for maximum allowable potential of 3,000 bbl. of oil. ,

Harbar Drilling Co.'s No. 1 Shutts, C N½ NW NE Section 32-11-17w, found Arbuckle lime at 3,597-3,628 ft., was bottomed at 3,631 ft., pumped 23 bbl. of oil in 8 hours and made potential of 69 bbl.

Earl Wakefield's No. 4-A Burnett, C E½ NE SE Section 1-11-18w, Burnett pool, was acidized, made high calculated potential and was completed for maximum allowable potential of 3,000 bbl. Production was from Arbuckle lime at 3,502-05 ft., total depth.

Cities Service Oil Co.'s No. 14 Rumsey, SW SE SE Section 23-11-17w, Bemis field, was bottomed at 3,570 ft. in Arbuckle lime, acidized and made potential of 3,000 bbl. of oil daily.

Darby Petroleum Corp.'s No. 6 Henderson, C N½ SW NW Section 7-11-17w, was rigging up rotary. Lario Oil & Gas Co.'s No. 3 Pearl, C W½ SW SE Section 13-11-17w, was building rotary rig. Cities Service Oil Co.'s No. 3 McCord NW NE NE Section 26-11-17w, was a location. Lario Oil & Gas Co.'s No. 1-D Walter, C N½ NW NE Section 2-12-18w, was rigging up rotary.

Cowley County

Art Brewer's No. 2 Curfman, NW NE SE Section 28-31-4, Hittle pool, Cowley County, found Arbuckle lime at 3,400 ft. and was dry and abandoned at 3,407 ft., total depth.

Gulf Oil Corp.'s No. 1 Denning, C N½ NW NW Section 28-32-5, Frog Hollow area, topped Arbuckle lime at 3,596 ft., had nothing showing and was dry and abandoned at 3,608 ft., total depth.

Frank H. Hollow's No. 2 Wilkins, C N½ NE SW Section 18-17-9w, Wilkins pool, made daily potential of 3,000 bbl. of oil and was completed in Arbuckle lime at 3,245 ft., total depth.

E. B. Shawver's No. 1 Davis, NE NW NE Section 21-30-4, Rock pool, had Bartlesville sand at 2,751-93 ft., total depth, pumped 227 bbl. of oil in 8 hours and made daily potential of 681 bbl.

Same operator's No. 1 Bolger, NW NE NE Section 21-30-4, was building rotary rig.

Ellsworth County

Continental Oil Co.'s No. 9 Rolfs, SW SW NW Section 34-17-8w, Edwards pool, Ellsworth County, was acidized and completed at total depth of 3,224 ft. in Arbuckle lime, for daily potential of 891 bbl. of oil.

McPherson County

Cities Service Oil Co.'s No. 1 Pearson, CWL SE SE Section 19-20-5w, Bornholdt area, McPherson County, was completed for maximum allowable potential of 3,000 bbl. of oil daily at total depth of 3,346 ft., in chat.

Rice County

Transwestern Oil Co.'s No. 3 Roesler, CWL NW SE

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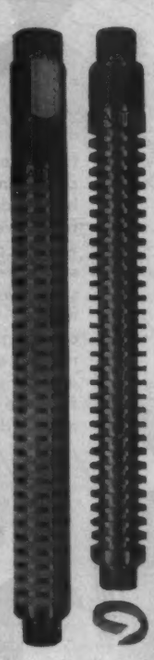

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Section 5-18-10w, Bloomer field, Rice County, had initial yield of 47 bbl. of oil daily at total depth of 3,305 ft. in Arbuckle lime.

Continental Oil Co.'s No. 2 Dickey, SE NE NW Section 24-18-8w, Geneseo pool, was treated with acid and completed for daily potential of 2,370 bbl. of oil at total depth of 3,185 ft. in Arbuckle lime.

Finston, Davis & Gore's No. 2 Gum, CWL NE SE Section 34-19-10w, Silica field, was bottomed at 3,305 ft. in Arbuckle lime and completed for initial daily yield of 47 bbl. of oil.

Among the Wildcats

George Hinkle's No. 1-A Kroutwurst, C N½ NE SE Section 34-16-11w, wildcat northeast of the Kraft pool, Barton County, found Arbuckle lime at 3,394-3,402 ft., total depth, and was acidized. It pumped 71 bbl. of 43.8-gravity oil in 15 hours, and was completed for an estimated 60 bbl. of oil daily.

Sunray Oil Co.'s No. 1-A McMillan, C W½ NW NW Section 14-29-2w, Sedgwick County wildcat that gave promise of opening a new area, based Mississippi lime at 3,875 ft.; topped Misener sand at 3,929 ft., dolomite 3,930 ft., Arbuckle lime 4,030 ft., total depth 4,045 ft., plugged back to 3,590 ft. At 3,570 ft., 11 bbl. of oil and 30 bbl. of water were swabbed in 8 hours. It was acidized, the hole filled with water and the well was abandoned.

J. E. Trigg and others' No. 1 Rasek, C NE NE Section 13-12-23w, wildcat in Trego County, topped Arbuckle lime at 4,124 ft., had nothing showing and was dry and abandoned at 4,209 ft., total depth.

Herb Long and others' No. 1 Reidel, CEL NE NE Section 4-18-14w, Barton County wildcat, was a cable rig. Lauck & Moncrief and others' No. 1 Gilkison, CEL NE SW Section 21-22-16w, Pawnee County wildcat, was moving in material. Sinclair Prairie Oil Co.'s No. 1 Binning, C S½ SE SW Section 26-32-13w, wildcat in Barber County, was a location. Hollow Drilling Co.'s No. 1 DeWolff, C S½ SE NE Section 25-20-12w, wildcat in Barton County, was a location. Sharon Drilling Co. and others' No. 1 Novotny, C N½ NW NE Section 32-16-10w, Ellsworth County wildcat, was moving in material. J. W. Kaufman's No. 1 Hayes, CNL NE NE Section 25-21-7w, Rice County wildcat, was rigging up rotary. Stewart & Whorton's No. 1-A Ehmke, CWL NW NW Section 14-32-3e, Cowley County wildcat, was a cellar. In the same county, Foster Oil Co.'s No. 2 Howard, C E½ SW SW Section 8-34-4, was drilling below 705 ft.

Johnson County

F. J. Kasper, trustee, was preparing to move rig from recently completed gas well in NW SE Section 33-13-22, Johnson County, to location for No. 2 Kaths, C NW Section 33-13-22. The No. 1 Kaths, SE SE NW Section 33-13-22, (incorrectly listed recently as being in Section 3-14-22), was the first well to find commercial gas in Bartlesville sand in Johnson County.

New Operations

Ed Ashlock and others' No. 2-A Lindemood, NE NW SW Section 7-25-13, Greenwood County wildcat, was drilling below 430 ft. Reed and others' No. 1 Blevins, NW SE NE Section 17-28-11, was moving in machine. Henderson and others' No. 1 Shook, SW SW NE Section 31-23-12, was moving in machine.

In Coffey County P. H. Hart's No. 8 Hanna, NW NE SW Section 11-23-13, was drilling below 1,130 ft.

In Stafford County Deep Rock Oil Corp.'s No. 4 Turner, C N½ SE SW Section 2-24-11w, was a location; Stanolind Oil & Gas Co.'s No. 8-B Ferris, C S½ SW NW Section 23-24-11w, was a location.

In Kearny County, Stanolind Oil & Gas Co.'s No. 1 Judd, C SE SE Section 15-21-38w, wildcat, was a location.

In Greenwood County, Marylyn Oil Co.'s No. 1 Moore, SW NW NW Section 24-24-9, was moving in machine.

In Cowley County, W. M. McKnab's No. 1 Coats, NE cor. Section 18-34-4, wildcat, was shut down at 45 ft.; Barwick and others' No. 1 Warren, C W½ NW NW Section 18-35-6, was moving in machine; Aylward Production Co.'s No. 1 Hanlen, SW NW NE Section 35-30-4, moving in material; Hawkeye Oil Co.'s No. 1 Russell, C W½ NW SE Section 19-30-5, location.

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FIG. 1375
POWELL PAT. RENEWABLE SEAT WHITE 200 WSP
FIG. 99
POWELL PATENT 200 WHITE WSP RENEWABLE SEAT
FIG. 1708
POWELL VALVES
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Forest City Basin

ST. JOSEPH, Mo., Apr. 22.—Outcome of Pawnee Royalty Co.'s efforts to uncover Viola lime production at the No. 1 Boice, NE NE Section 18-1n-16e, Falls City discovery well in Richardson County, Nebraska, may be known this week. Viola lime was topped at approximately 2,900 ft., with top of the formation reported to be hard. Six-inch casing was run and the crew began bailing. This well originally was completed as a Hunton lime producer, but when showings of oil were found in Viola lime at a well drilled southwest of the discovery, operators decided to deepen No. 1 Boice in the hopes of finding larger production in the deeper formation.

Pawnee Royalty Co. was building rig at its No. 1 Bucholz, C NW SW Section 17-1n-16e, Richardson County. Rotary tools will be used. Uhri Oil Co. spudded its No. 1 Ogle, NE NW SE SE Section 9-1n-14e, also a rotary test.

In Missouri, George Vincent and associates were resuming work at their No. 1 Dillingham, C NE SW Section 16-53-34w, Platte County, which has been shut down on top of Mississippi lime at 1,063 ft. Nathan & Brin also planned to resume work at their No. 1 Decker, C NW NW Section 1-61-39w, Holt County. American Oil & Gas Corp. was building rig at its No. 1 Thompson, SW SW Section 30-58-31w, DeKalb County.

A failure was recorded in Platte County, where Missouri Valley Gas & Oil Co.'s No. 3 Brown, SE NW Section 7-51-33w, a gas test, was dry and abandoned at 1,015 ft.

Ben Hall of Kansas City completed a shallow gas test in C S½ Section 35-52n-32w, Clay County, but depth was not announced. He has rig on ground for a test in CSL N½ NE Section 2-51-32w, Clay County.

In Northeast Missouri, T. E. Baldwin's No. 2 Johnson, SW NE Section 21-65n-15w, Schuyler County, set surface pipe at about 300 ft. Eddington and others' No. 1 Clark, NE SE Section 8-63-14w, Adair County, was reported drilling below 958 ft. in Viola lime. Same operators' No. 1 Johnson-Capps, SW SW SW Section 31-64-15w, Adair County, was drilling in Devonian lime below 840 ft.

In the Kansas sector of the Forest City basin, Carl Lebsack's No. 1 Maduska, C SE NE Section 36-8s-20e, Leavenworth County, bailed some heavy, black oil with showings of gas at around 750 ft., and the crew was drilling ahead. James W. Young's No. 1 McLeod, C NW SW Section 4-10-20e, Jefferson County, south of McLaughlin Sons, Inc.'s No. 1 McLaughlin, SW NE NW Section 4-10-20e, gas discovery well, spudded.

Oklahoma Operations

By
DAL DALRYMPLE

Second Wildcat in Marshall County Finds Showing of Oil

Southern Oklahoma continued to hold major interest for oil operators in the state, but developments in other sectors of Soonerland were not without interest. Two pool openers in Lincoln County were completed, as was the largest producing well to date in the Byars pool, McClain County. A Cromwell sand pool was opened in Okfuskee County. Four recently opened pools were named by the Oil Field Nomenclature Committee.

With work getting under way at four new tests on the Pure Oil Co.'s block around its discovery well in the Cumberland pool, Marshall County, interest in that sector momentarily veered to another Marshall wildcat, the Johnson-Kemnitz & McGraw Oil Co.'s No. 1 Neff-Godfrey, SW SE N5 Section 14-6s-6e. It is southwest of the Cumberland discovery well. The crew was trying to dry hole for a test, after operators tried to cement off water believed coming from around 3,900 to 4,100 ft. About 300 ft. of oil was reported on top of water in the hole, coming from an undetermined source. If production is not developed in the upper zones, the well was to be drilled to Arbuckle lime.

In the Cumberland pool, Pure Oil Co.'s No. 1 Quinton Little A, C W½ NE SE Section 28-5s-7e, was estimated good for 3,500 to 4,000 bbl. of oil daily from Tulip Creek sand. The crew apparently succeeded in killing gas and was waiting. The company's No. 1 Little B, NE SW SE Section 28-5s-7e, had rig on ground; No. 1 Stewart A, SW SE NE Section 28, was clearing location; the No. 1 Thomas, S WNE NW Section 28, was a location; the No. 1 Park College, SW SW SE Section 27-5s-7e, Bryan County, was moving in material.

C. A. Yoakum's No. 1 Replogle & Johnston, NW NW NE Section 11-11-10, opened a pool 4 miles east of Okemah, Okfuskee County. It found Cromwell sand at 3,166-76 ft., total depth, and was estimated good for 100 to 150 bbl. of oil daily. It was shut in for tankage.

The following pool names were recommended by the Nomenclature Committee: West Arno, opened by Bryan Petroleum Co.'s No. 1 Ah-Sey, NE NW NE Section 34-14-7, Creek County, with 40 bbl. initial yield from Prue sand; Kendrick, opened by Summit Drilling Co.'s No. 1 Cleer, Section 6-15-5, Lincoln County; Perkins, opened by Portable Drilling Co.'s No. 1 Teter, Section 27-17-2e, Lincoln County; and North Wewoka, opened by Stanolind Oil & Gas Co.'s No. 1 Aldridge, Section 32-9-8e, Seminole County.

Wildcat Completions

Summit Drilling Co.'s No. 1 Cleer, C W½ SE SW Section 6-15-5, wildcat northwest of Kendrick in Lincoln County, had Prue sand at 3,524 ft., Wilcox sand 4,617 ft., total depth 4,635 ft., was plugged back to 3,490 ft., shot at 3,511-55 ft., acidized, flowed 311 bbl. of oil and 100 bbl. of water through 36/64-in. choke, and was completed for 635 bbl. of oil daily. Gravity of the oil was 50°. Gas gaged 2,000,000 cu. ft. The new area has been named the Kendrick pool.

Portable Drilling Co.'s No. 1 Teter, NW NW SW Section 24-17-2e, in the northwestern part of Lincoln County and south of the town of Perkins, was an old well originally abandoned at 4,779 ft., total depth. The Portable company took over, perforated casing in Hunton lime at 4,500-10 ft., and it flowed 591 bbl. of oil through ½-in. choke in 24 hours. Gas gaged 5,400,000 cu. ft. It has been named the Perkins pool.

Hahn's No. 2 Graham, SE SE NW Section 23-7-8, Hughes County wildcat, topped sand at 1,105 ft., had a hole full of water and was abandoned at 1,108 ft., total depth.

Johnson's No. 1 Florence, NW NE SW Section 2-3s-6w, Stephens County, was dry and abandoned at 340 ft.

J. R. Welch's No. 1 Walker, NW SW SW Section 6-13-10, wildcat location in Okfuskee County, was reported abandoned.

Republic Natural Gas Co.'s No. 1 Hempsten, SW NW SW NE Section 13-6n-16ecm, Texas County, was bottomed at 2,855 ft., acidized and gaged 22,000,000 cu. ft. of gas daily.

Estimated Daily Production

Estimated daily production for Oklahoma for the week ended April 20, and for the preceding week was as follows:

	Barrels	
	Apr. 20	Apr. 13
Allen	5,700	5,850
Billings	6,250	6,200
Burbank	7,200	7,250
South Burbank	8,650	8,650
Balance Osage	16,650	16,750
Blackwell district	3,700	3,675
Bristow-Slick	6,050	6,100
Chandler	1,200	1,250
Crescent	2,050	2,125
Cromwell	3,000	3,000
Cushing-Shamrock	9,200	9,250
Duncan	3,750	3,725
Edmond	4,300	4,300
Fish	3,400	3,400
Fitts	18,550	17,900
Jesse	2,250	2,250
Graham-Fox	2,025	2,150
Gray	750	750
Healdton	8,850	8,825
Hewitt	3,725	3,925
Keokuk	3,150	3,225
Konawa	1,150	1,200
Lucien	8,100	8,150
Moore	1,950	1,875
Northeastern counties	17,000	17,250
Oklahoma City	100,300	90,750
Olympic	2,200	2,350
Ramsey	3,800	3,800
Sasakwa	1,575	1,700
Sholem-Alechem	2,825	2,900
Seminole district:		
Bowlegs	7,000	7,200
Carr City	2,375	2,400
Dora	2,000	2,100
Earlsboro	4,250	4,350
South Earlsboro	550	550
East Earlsboro	2,200	2,250
Little River	6,650	6,800
East Little River	700	725
Maud	625	625
Mission	1,275	1,350
Seminole	7,350	7,450
East Seminole	1,150	1,175
Searight	2,200	2,400
Total Seminole	38,325	39,375
St. Louis-Pearson	30,000	31,000
Tatums-Tussy	2,175	2,275
Tonkawa-Garber-Thomas	4,100	4,100
Wewoka	1,750	1,800
Yale-Jennings	3,525	3,550
Other pools	81,500	79,675
Total Oklahoma	420,675	412,300

McClain County

Patsy Oil Co.'s No. 3 Richardson, SE NW SE Section 9-5-3e, Byars pool, McClain County, was acidized and flowed 4,265 bbl. of oil in 24 hours, rating the biggest producer completed in the field. Production was from Viola lime topped at 3,508 ft., total depth 3,616 ft. It is the farthest northwest producer in the pool and is nearest the Canadian River, which is the boundary line between McClain and Pottawatomie counties.

Hughes County

Winona Oil Co.'s No. 4 Street, SE NE NW Section 21-7-8, West Holdenville area, Hughes County, found Gilcrease sand at 3,115-80 ft., total depth 3,181 ft., was shot and pumped 28 bbl. of oil in 24 hours.

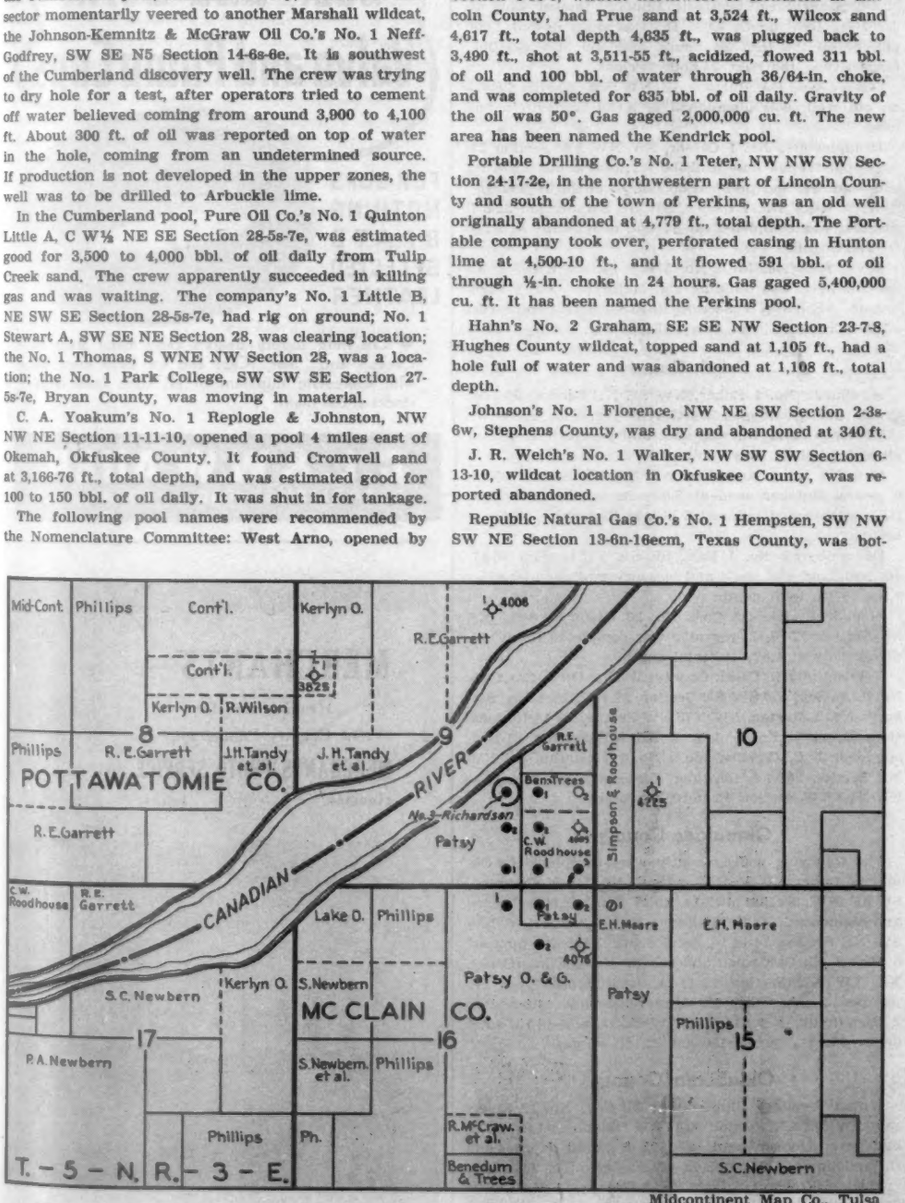
Davon's No. 1 White, C SE SW Section 5-8-10, an old well bottomed at 3,096 ft., was rigging up standard tools to deepen.

Pontotoc County

W. B. Pine's No. 3 Randall, SE NE NW Section 35-5-4, Bebee field, Pontotoc County, topped Viola lime at 2,328 ft., was bottomed at 2,555 ft., was acidized, and pumped 290 bbl. of oil in 24 hours.

Senora Oil & Gas Co.'s No. 5 Tucker, NW SE NE Section 35-5-4, had Viola lime at 2,429 ft., total depth 2,591 ft., and pumped 80 bbl. of oil daily.

Moday's No. 2 Kilcrease, SW NE NW Section 7-



Midcontinent Map Co., Tulsa

The eleventh and largest producer in the Byars pool, McClain County, was completed at Patsy Oil Co.'s No. 3 Richardson, SE NW SE Section 9-5-3e, for 4,265 bbl. of oil daily. It is the nearest producer to the Canadian River, boundary line between McClain and Pottawatomie counties

4-8, had sand at 1,995 ft., and was dry and abandoned at 2,053 ft., total depth.

New work in Pontotoc County: Zumbro's No. 3 Owenby, NE SE SW Section 21-3n-4e, cellar and pits; Superior Oil Co.'s No. 4 Indian Boy, NW SE NW Section 36-5-4, drilling below 1,150 ft.; Scroggins' No. 1 Scroggins, SE NW NE Section 34-5-7, drilling below 120 ft.

Pottawatomie County

Denver Producing & Refining Co.'s No. 3 Houck, NW NW NW Section 1-6-4, St. Louis district, Pottawatomie County, found Earlsboro sand at 3,304 ft., total depth 3,316 ft., was shot and completed, flowing 150 bbl. of oil in 24 hours.

Alma Oil Co.'s No. 1 Simons, SE SE SE Section 28-7-5, an old well, was plugged back from 4,280 ft. to 3,265 ft., casing perforated and it pumped 5 bbl. of oil and 235 bbl. of water daily.

T. C. Iglehart's No. 1-A Haer, NW NW SE Section 31-10-5, King area, found Wilcox sand at 4,447 ft., total depth 4,449 ft., plugged back to 4,414 ft., acidized, water intruded, and it was abandoned.

New operations in Pottawatomie County: Simpson-Roodhouse Drilling Co.'s No. 1 Neal, NW SE SE Section 33-6-3e, wildcat southwest of the Asher pool, location; Denver Producing & Refining Co.'s No. 3 Richards, SE NE NE Section 2-6-4, building rig; H. L. Berkey's No. 1 Willsie, NW SE SW Section 29-7-4, spudded; Pioneer Drilling Co.'s No. 1 Miller, NW NE NE Section 32-7-4, building rig; Ray Dunnett's No. 1 Ewton, NE NE NE Section 1-10-3e, wildcat, set surface casing, waiting on cement; George Pace's No. 1 Readdy, SE SE NW Section 31-10-5, set surface casing, waiting on cement; Thornton and others' No. 1 McGee, SW SE NW Section 31-11-4, cellar and pits.

Okfuskee County

Summit Drilling Co.'s No. 1 Hildebrand, NE SW SW Section 18-10-11, West Weleetka area, Okfuskee County, had sand at 2,164 ft., total depth 2,166 ft., and pumped 75 bbl. of oil and an equal amount of water in 24 hours.

Fleming's No. 1 McKinney, NW SW SE Section 18-10-11, was a location. Suppes' No. 6 Alexander, SW NW NE Section 35-11-9, spudded.

Seminole County

D. W. Malernee's No. 1 Wood A, SW NE SE Section 33-7-6, Dora area, Seminole County, topped sand at 2,777 ft., total depth 2,885 ft., was shot, flowed 1,000 bbl. of oil the first 24 hours, and 500 and 300 bbl., respectively, the next 24-hour periods.

Olsen's No. 1-A Burton, SE NW SW Section 28-9-6, an old well, was abandoned at 2,632 ft., with a bad hole.

Droppleman's No. 1 Caesar, SW NW SW Section 21-6-6, topped Viola lime at 3,590 ft., total depth 3,678 ft., was acidized, and pumped 30 bbl. of oil in 24 hours.

W. S. Keys' No. 1 Carter, SW SE SW Section 22-8-7, recently was completed for 17 bbl. of oil daily at 3,226 ft., total depth.

W. C. McBride, Inc.'s No. 3 Boy Scouts, SW SW SE Section 7-9-7, was building rig. McIntyre's No. 1 Richardson, NE SW NW Section 19-10-8, wildcat southwest of the Cromwell pool, was building rig.

Creek County

Kirchner's No. 1 Baker, NW SE NE Section 20-17-9, Creek County, topped Bartlesville sand at 2,536 ft., total depth 2,571 ft., was shot and pumped 40 bbl. of oil and 8 bbl. of water daily.

Cusack's No. 1 Anderson, NE NE NE Section 35-14-9, found Dutcher sand at 3,058 ft., total depth 3,120 ft., was shot and pumped 6 bbl. of 33-gravity oil in 24 hours.

Dannenberg's No. 1 Fast, SE SE NE Section 36-17-10, had sand and shale and was dry and abandoned at 1,903-30 ft., total depth.

Sinclair Prairie Oil Co.'s No. 26 Kiefer, C W½ NE SE Section 17-17-12, recently was completed for 6 bbl. of oil daily at 1,529 ft., total depth.

New activity in Creek County: Wilcox Oil & Gas Co.'s No. 1 Ah-Sey, SE SW SE Section 27-14-7, location; Stekoll's No. 1 Morton, SW NW SW Section 35-14-10, location; Brauer's No. 1 Ary, C SE SW Section 31-16-7, spudded; J. C. Crosbie, Inc.'s No. 1 Mosquito, SE NW NE Section 20-17-9, location; Adamson's No. 1 Anthis, NE NW NW Section 15-18-10, machine.

Okmulgee County

The following wells recently were completed in Okmulgee County: L. V. Richardson's No. 1-A McCommon, SE SE NW Section 4-12-14, total depth 2,908 ft., dry and abandoned; J. E. Wallace's No. 17 Colbert, C N½ SW NE Section 14-14-14, total depth 1,115 ft., pumped 5 bbl. of oil; Castleman and others' No. 6 Flint (Cook), NE NW NE Section 25-14-14, total depth 1,140 ft., pumped 3 bbl. of oil; M. Vandeventer and others' No. 2 Rich-Creek, NE SE NW NW Section 34-16-13, total depth 650 ft., gaged 750,000 cu. ft. of gas.

Oklahoma County

Indian Territory Illuminating Oil Co.'s No. 12 Emerson, NW NE SW Section 30-11-2w, Oklahoma City field, had lower Hoover sand at 4,055 ft., total depth 4,082 ft., and pumped 257 bbl. of 40-gravity oil in 24 hours.

Sinclair Prairie Oil Co.'s No. 9 Stamper, SW SE NW Section 30-11-2w, was a rig.

Osage County

M. & T. Oil Co.'s No. 1-A Osage, NW SW NW NE Section 31-22-9, Osage County, was completed for 13 bbl. of oil daily at total depth of 2,324 ft.

Sagamore Oil & Gas Co.'s No. 406 Osage, SW SE NE NE Section 36-28-10, gaged 630,000 cu. ft. of gas at total depth of 814 ft.

Indian Territory Illuminating Oil Co.'s No. 468 Osage, SW NE SE NE Section 11-26-10, was dry and abandoned at 1,970 ft.

Tulsa County

Keener Oil & Gas Co.'s No. 14 Walker, C SW NW Section 18-21-13, Tulsa County, pumped 5 bbl. of oil daily and was completed at 1,170 ft., total depth. Blankenship and others' No. 1 fee, SE NE NW Section 2-19-14, was dry and abandoned at 1,288 ft. L. E. Martin's No. 8 Barnett, SW SE SE Section 13-18-14, was dry and abandoned at 1,309 ft.

(Continued on Page 222)

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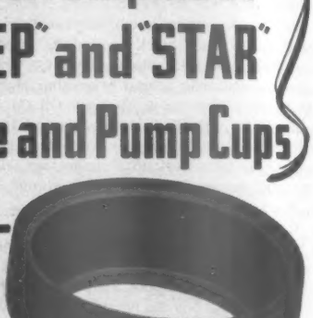

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By
F. L. SINGLETON

Mathis Field Develops Oil As Well as Gas-Distillate

CORPUS CHRISTI, Tex., Apr. 22.—The opening of the first crude-oil production in the East Mathis field, San Patricio County; scheduled production tests at several widely scattered wildcats, and extensions to proven fields were the highlights of development in the Southwest Texas district the past week.

The East Mathis field, San Patricio County, opened in June of last year as a distillate field, received its first crude production with the completion of Seaboard Oil Co.'s No. 1 W. E. Lovett, in Section 13, A.B.&M. Survey 11. The well was drilled to 5,695 ft. and production was obtained by perforating casing at 5,614-18 ft. During a 24-hour gage, flowing through a ⅛-in. choke, the well produced 140 bbl. of pipe-line oil. Tubing pressure was 1,000 lb. and casing pressure 1,350 lb. The well was completed in a new sand approximately 400 ft. deeper than the discovery well.

Texas Gulf Producing Co. has apparently opened a pool 3 miles southwest of Sinton, San Patricio County, with No. 1 San Antonio Loan & Trust Co., although the value of the new strike will not be ascertained for several weeks as the result of a blowout while the company was testing. The well was drilled to a total depth of 7,537 ft., and 5½-in. casing cemented at 6,724 ft. Casing was perforated at 6,675-77 ft. and the well flowed gas, distillate, and some salt water through a 7/64-in. choke, with working pressure 1,150 lb. While the well was being killed preparatory to retesting, it blew out around the surface casing and started to crater. The rig has been moved from the location, while the company attempts to bring the well under control by pumping in heavy mud.

Another wildcat in Victoria County made its appearance as a possible pool opener as Mayo & Blaffer's No. 1 T. C. Edwards tested 475 lb. working pressure and 2 gal. of drilling mud with a show of free oil on a 4½-minute drill-stem test at 5,012-50 ft. Location is in the D. Nira Survey, just southeast of John Mayo's No. 1 T. C. Edwards, a dry hole which is reported to have logged several interesting showings.

Colton & Colton's No. 1 Buhler, the discovery well of the North Telferner field, Victoria County, flowed 28 bbl. of 21.6-gravity oil per day through a 5/32-in. choke. Tubing pressure was 900 lb. and shut-in casing pressure 1,060 lb. This well was completed the previous week in sand at 2,693-98 ft. Approximately 3 miles south of the Keeran field Steve Ryan staked location for an 8,500-ft. wildcat on the Lake Placedo plantation, in Lot 1, Block 2, A. Esparza Survey. The well is about 2 miles northwest of Ray Ranger's No. 1 Willett Wilson, recently abandoned at 6,510 ft.

Wellington Oil Co. and others' No. 1 Swenson, 1½ miles south of the South Clara Driscoll field, Nueces County, is swabbing after acidizing through perforations at 5,300-21 ft. In the field proper Wellington Oil Co.'s No. 6 Dugger recovered 210 ft. of pipe-line oil and showed 440-lb. working pressure on a 10-minute drill-stem test at 3,894-99 ft. Texas Co.'s No. 2 Richardson is showing gas while testing through perforated casing at 3,882-88 ft.

In Hidalgo County Gulf States Oil Co. was preparing to test No. 2 Josefa Cardenas after cleaning the hole of stuck drill stem to a total depth of 8,622 ft. Casing was cemented at this depth after an electrical survey was made. The well is in the San Salvador del Tule grant, about 5 miles southwest of Hargil.

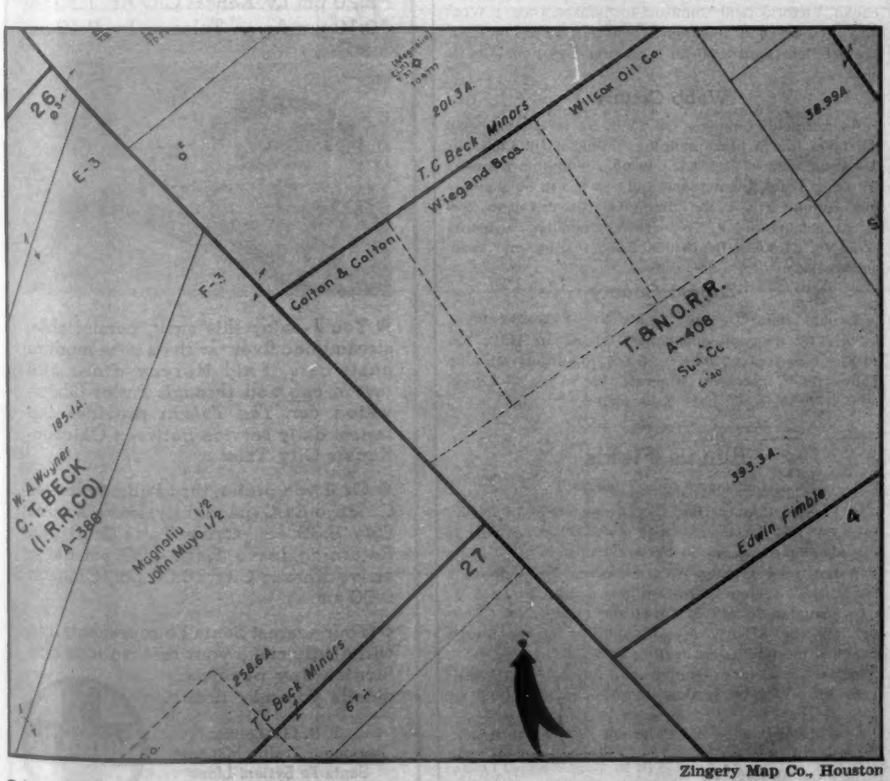
Operators interested in the deep-drilling program along the old Jackson shore-line trend have centered their attention on Edwin M. Jones' No. 1-A George West, about 2 miles northwest of the town of George West in Live Oak County. The well was drilled to 10,839 ft. and casing was cemented for a production test. Details as to how much casing was cemented and where the well will be tested were not available, but it is known that 10,600 ft. of 6-in. casing was on the location and that an electrical survey is reported to have shown favorable indications at approximately 9,500-9,600 ft.

Mills Bennett Production Co. and Anderson-Prichard Oil Corp.'s No. 2 D. E. Robinson, West Tuleta field, Bee County, was gaged through the separator and the well flowed 144 bbl. of distillate and 5,000,000 cu. ft. of gas per day, flowing through a ⅝-in. choke. Casing pressure was 2,415 lb. and tubing pressure 2,415 lb. Production is from the Carrizo sand through perforated casing at 7,525-35 ft. The well was drilled to 9,200 ft. and plugged back to the present depth after a series of tests in the Wilcox formation recovered gas, distillate, and salt water.

Atlantic Refining Co.'s No. 1 Conwell, which opened the first Tertiary Wilcox sand production in the district, and the first field in De Witt County, flowed 72 bbl. of distillate per day while flowing through a ¼-in. choke. Tubing pressure was 2,450 lb. and casing pressure 2,650 lb. No additional locations have been announced for the field.

The Wade City field, Jim Wells County, was being extended ½ mile west as Henderson Coquat's No. 1 Pundt recovered 1,350 ft. of oil on a 20-minute drill-stem test at 4,807-11 ft., the total depth. Casing was cemented and the well is testing through perforated casing. Rodney De Lange's No. 5 McNeil flowed 297 bbl. daily on a ⅞-in. choke from perforated casing at 4,920-28 ft. North of the field about 1 mile Henshaw Brothers' No. 1 Blasehke was drilling in sandy shale below 4,000 ft., while 2 miles northeast Windsor Oil Co.'s No. 1 Kusel is drilling in shale below 3,000 ft.

The completion of a gas well midway between the Kelsey and Sun fields in Starr County opens the way for further development. Sun Oil Co.'s No. 1 Rodriguez is flowing gas and wash water with a slight show of distillate while cleaning out through perforated casing at 6,435-39 ft., and 6,441-44 ft. The well is testing through a 5/32-in. choke and tubing pressure was 1,735 lb. and casing pressure 1,850 lb.



Zingery Map Co., Houston

Colton & Colton's No. 1 Mahon & Buhler, the discovery well of a new field, south of the Telferner gas field, Victoria County

SOUTHWEST TEXAS COMPLETIONS IN PROVEN FIELDS

Aransas-San Patricio Counties

McCampbell field: Bay-Tex Oil Corp.'s No. 1 Peoples, perforated casing 7,454-61 ft., 114 bbl., ⅝-in. choke. Haven Oil Co.'s No. 1 Conn-Brown, perforated casing 7,147-55 ft., 92 bbl., ⅞-in. choke. Mannhan Oil Co.'s No. 6-A Carlock, perforated casing 6,779-84 ft., gas well.

Bastrop County

Cedar Creek field: Marts & Beaven's No. 1-B Orgain, 2,210 ft., dry and abandoned.

Caldwell County

Dale field: Ralph Ogden's No. 5 Talley, 2,190 ft., 113 bbl., pumping. Luling field: Johnson Leroy and others' No. 1 J. T. Brown, 2,166 ft., 15 bbl. oil and 60 bbl. water, pumping.

Duval County

Cedro Hill field: Magnolia Petroleum Co.'s No. 2 Duval County Ranch Co., perforated casing 1,452-55 ft., 15 bbl., pumping. Humble Oil & Refining Co.'s No. 8-F Duval County Ranch Co., 1,434 ft., 27½ bbl., ¼-

in. choke. Longhorn field: M. M. Miller & Son's No. 21 fee, sand 4,028-38 ft., 108 bbl., 5/32-in. choke. Muralla field: Sun Oil Co.'s No. 2 Valerio, 4,845 ft., dry and abandoned. Rancho Solo field: Andrus & Reed's No. 1 Peters, perforated casing 1,827-36 ft., 70 bbl., pumping. Seven Sisters field: Wellington Oil Co.'s No. 19-C Welder, 2,550 ft., 95 bbl., pumping. Tarancahuas field: Cox, Hamon and others' No. 6 Hoffman, 2,059 ft., 202 bbl., ⅝-in. choke.

Jim Hogg County

Colorado field: Humble Oil & Refining Co.'s No. 6 King, 3,034 ft., 198 bbl., ⅛-in. choke. Kelsey field: Humble Oil & Refining Co.'s No. 56 McGill, 4,733 ft., 156 bbl., 9/64-in. choke.

Jim Wells County

Ben Bolt field: H. H. Howell and others' No. 1 Garcia, perforated casing 5,243-56 ft., 32 bbl., ⅛-in. choke. Ben Bolt field: Magnolia Petroleum Co.'s No. 3 Elizando, perforated casing 5,260-67 ft., 326 bbl., ⅛-in. choke. Premont field: H. H. Howell and others' No. 1 La Favor, perforated casing 2,343-54 ft., 20 bbl., jetting, 80 per cent fresh water. Howell & Hubbell's No. 1 Miller perforated casing 2,346-56 ft., 300 bbl. fluid, 55 per cent water, open tubing. Howell & Hubbell's No. 3 Ritter, perforated casing 2,352-60 ft., 80 bbl., jetting. Max Storer's No. 1 Lozano, perforated casing 4,878-83 ft., 108 bbl., 75 per cent salt water, ⅛-in. choke. South Alfred field: I. K. Howeth's No. 1 Adams, perforated casing 4,685-90 ft., 48 bbl., 3/32-in. choke.

Milam County

Rockdale field: H. H. Coffield's No. 1 Smith, 680 ft., dry and abandoned.

Nueces County

Agua Dulce field: L. M. Lockhart, 6,703 ft., 12 bbl., distillate, ¼-in. choke. Minnie Bock field: Blanco & Buchanan's No. 2-C Gandy, 6,000 ft., dry and abandoned. E. A. Graham's No. 1 Reidel, perforated casing 3,817-20½ ft., 32 bbl., 3 per cent salt water, ⅛-in. choke. Reed & Cox and others' No. 1 Hilliard, perforated casing 3,815-19 ft., 50 bbl., 7/64-in. choke. Richard King field: Southern Minerals Corp.'s No. 7-A King, perforated casing 5,411-14 ft., 157 bbl., ⅛-in. choke. South Clara Driscoll field: Wellington Oil Co.'s No. 14 Dugger, 6,750 ft., 25 bbl., ¼-in. choke. Stratton field: Gulf Plains Corp.'s No. 1 Gruene, perforated casing 6,542-48 ft., 60 bbl.

Refugio County

Fagan field: Barnsdall Oil Co.'s No. 2 Fagan, 6,150 ft., dry and abandoned.

San Patricio County

East White Point field: R. A. Welch's No. 8 fee, perforated casing, 5,670-78 ft., 180 bbl., ⅛-in. choke. Midway Oil Co.'s No. 2-B Floerke, 5,358 ft., 30 bbl., 7/64-in. choke. Esves Oil Co.'s No. 1 Dimmick, perforated casing 5,647-52 ft., 10 bbl., 5/32-in. choke.

Starr County

Sun field: Humble Oil & Refining Co.'s No. 2 Montalvo, 4,927 ft., 120 bbl., 9/64-in. choke. Sun Oil Co.'s No. 10 McKinney, 4,981 ft., dry and abandoned. Sun Oil Co.'s No. 6 Olivarez, perforated casing 4,625-35 ft., 216 bbl., ⅛-in. choke.

Victoria County

McFadden field: Barnsdall Oil Co.'s No. 2-B McFaddin, perforated casing 6,350-57 ft., 129 bbl., ⅛-in. choke. Victoria field: Johnson & Johnson's No. 1 Wolf, 4,844 ft., dry and abandoned. Smith & Langston's No. 1 McMullen, sand 3,040-56 ft., 44 bbl., 18 hours, ⅛-in. choke.

Webb County

Adami field: Colmena Oil Co.'s No. 2 Adami, sand 997-1,000 ft., 45 bbl., pumping. Colmena Oil Co.'s No. 3 Adami, sand 995-1,002 ft., 40 bbl., pumping. Colmena Oil Co.'s No. 4 Adami, sand 1,011-13 ft., 40 bbl., pumping. Humble Oil & Refining Co.'s No. 2 Yeager, 999 ft., 31 bbl., pumping. Volpe field: Magnolia Petroleum Co.'s No. 34 Volpe-Benavides, 2,508 ft., dry and abandoned.

Zapata County

Escobas field: George Buck's No. 8 Trevino-Blair, 1,398½ ft., dry and abandoned. Kleiner & Hill's No. 20 Trevino, sand 1,229-54 ft., 9 bbl., pumping. Mirando Valley field: Interstate Minerals, Inc.'s No. 43 Lopez, sand 1,700-45 ft., 60 bbl., ¼-in. choke.

Illinois Fields

(Continued from Page 206)

In Fayette County Oils, Inc., deepened No. 1 Wade, NW NW NE Section 28-5n-4e, to 2,520 ft., where it was abandoned as dry in Fredonia lime.

In Lawrence County Walter Payne's No. 1 Monjar, SW NE NW Section 28-4n-11w, was drilling at 1,460 ft.

In Schuyler County Brainard and others' No. 1 Foster, NW cor. SE SW Section 21-3n-4w of the fourth principal meridian, was drilling at 300 ft.

In Madison County Jennings and others' No. 1 Mossman, SE SW NW Section 22-4n-5w, was drilling at 1,855 ft.

In Wabash County Big Chief Oil Co.'s No. 1 Reach, SW SW SW Section 34-2n-13w, Cypress sand at 2,394 ft., drilling at 2,460 ft.

In Clinton County Garnier was building rig for No. 1 Tony, C W½ NW NE Section 30-3n-2w. Brown & Gouin's No. 1 Thole, C NE NE Section 32-3n-4w, was drilling at 920 ft. with no showing of oil. Cypress sand was topped at 840 ft. Miller's No. 1 Schmidt, C E½ W½ SE Section 35-2n-5w, drilling at 65 ft.

In Randolph County Egyptian Tie & Lumber Co.'s No. 1 Beattie, SW SW SW Section 11-5s-5w, drilling at 680 ft.

In Hamilton County Kingwood Oil Co.'s No. 1 Dodd, SE SE NW Section 6-6s-7e, swabbed 199 bbl. of oil in 11 hours after a 40-qt. shot at 2,688-2,705 ft.; cleaning out.

In Jefferson County Magnolia Petroleum Co.'s No. 1 Lettie Jones, NE NE NE Section 10-3s-2e, was drilling at 3,900 ft.

In Jefferson County Rodger C. Young's No. 1 Whittington, SE SE SW Section 30-4s-3e, rigging up rotary.

In White County Phillips Petroleum Co.'s No. 1 Garr, C W½ NW NW Section 34-4s-11e, drilling at 4,535 ft. New Penn Development Co.'s No. 1 Williams, SW cor. SE SE NW Section 28-3s-9e, flowed 131 bbl. in 30 hours from McClosky lime at 3,400-27 ft. and was shut in for tank room.

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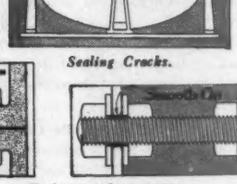

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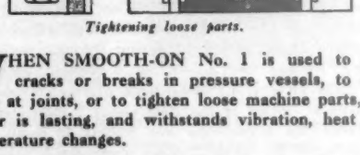

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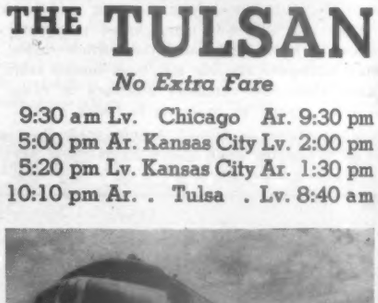

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By
D. H. STORMONT

New Ordovician Pool Looms In Crane County; New Tests

MIDLAND, Tex., Apr. 22.—Continuing the trend of discoveries in West Texas during the past 2 months, another strike was made last week which rates of equal importance with Crockett County's 2-month-old Pennsylvanian find and its week-old Yates sand discovery.

The most recent new pool is in central Crane County and in the Ordovician horizon. The well is Gulf Oil Corp.'s No. 1-A Tubb, on the south edge of the Tubb field, and indicates the fourth Ellenburger lime (Lower Ordovician) field in West Texas. The well, about 3½ miles southeast of Ordovician production on the west side of the Tubb field, was reported to have topped the horizon higher than any other well in Crane County. Ellenburger lime was found at 5,760 ft., or 50 ft. higher, structurally, than in Loffland Brothers' test which was junked and abandoned 2 miles to the northwest several years ago after reporting a structural high top of the lime, No. 1-A Tubb had been dry in the regular Tubb horizon from 4,375 to 4,400 ft. Drilling deeper from 5,773 to 5,783 ft. recovered 2 ft. of core, the top few inches showing porosity and the lower few inches carrying stains of oil. A 30-minute drill-stem test at 5,749-83 ft. recovered 5,710 ft. of 32.7-gravity oil through ¾-in. choke. The well then made six heads with open-flow pressure of 200 lb. The maximum gas volume and the maximum pressure were 112,000 cu. ft. and 1,400 lb., respectively, during the 30-minute test.

At last reports the operators were running 1,565 ft. of 7⅝-in. casing through the salt section and will later run the oil string to the top of the Ellenburger lime.

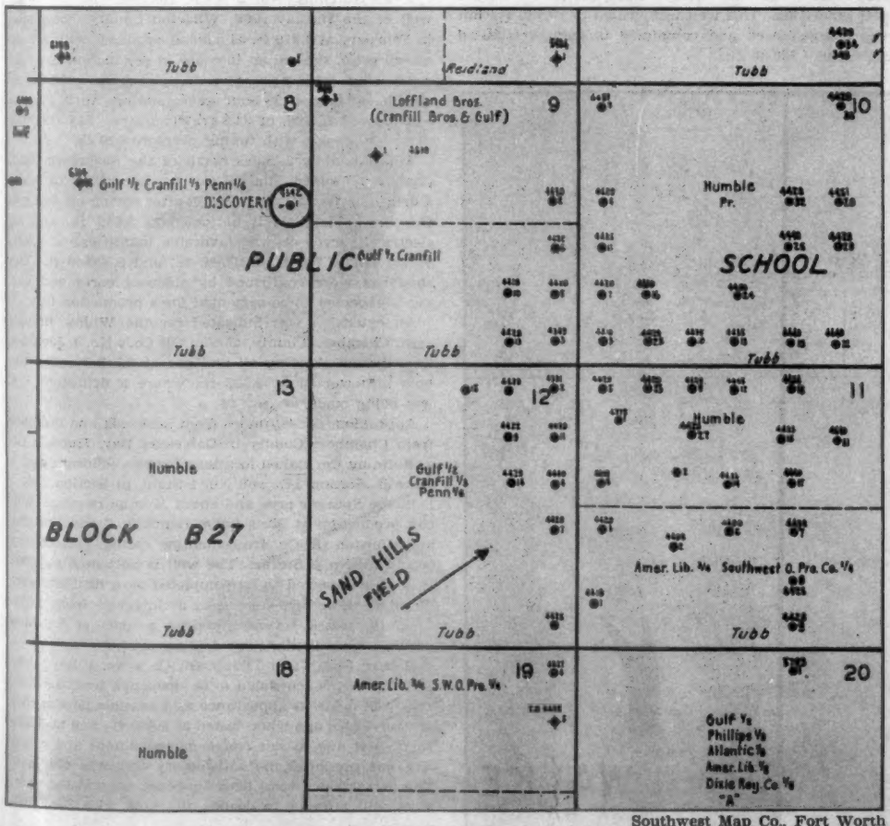
The new discovery is separated from the Ordovician production in the Sand Hills field by several dry holes. No Simpson lime was reported. This is considered significant since only about 20 miles to the south and in northern Pecos County, Humble Oil & Refining Co.'s No. 1 Young is still drilling in the Simpson section, and has thus far logged a 1,300-ft. section.

Crockett County Discovery

Soma Oil & Gas Syndicate's Yates sand discovery well in Crockett County last week continued to hold much attention in the district. On a series of short tests early in the week after a control-head had been installed, the well made successively smaller flows of oil and larger flows of gas. At the time the well blew in late in the previous week it was estimated by some as high as 25,000 bbl. daily. This was when the producing horizon was thought to be the Yates lime. Over the week end and early this past week, based on the short flows, the well was estimated conservatively at 25 bbl. hourly with about 40,000,000 cu. ft. of gas daily. The idea that another Yates field had been discovered is definitely eliminated by the fact that only ½ mile south of Soma's well is a small gas well from the same horizon.

The large gas volume was killed when 17 tons of 11-lb. mud was pumped into the hole. Operators are preparing to run 6⅝-in. casing to the top of the pay at 1,038 ft. When the well blew in the total depth was given as 1,039 ft., but according to measurements it is now bottomed at 1,075 ft. It has drilled itself 36 ft. into the Yates sand if the calculations are correct.

Two lease deals were reported in the immediate area of the discovery. Mudge Oil Co., Dallas, Tex., acquired a 40-acre tract offsetting the well for a reported $90,000 of which one-third was cash and the remainder out of the oil to be produced. A 10-acre tract offsetting the well was acquired by W. C. Ray and associates of San Angelo, Tex., for a consideration of $1,000 per acre, or $10,000, and the drilling obligation for an offset to the No. 1 Noelke, discovery well.



Southwest Map Co., Fort Worth

Gulf Oil Corp. has opened an Ordovician oil field in central Crane County at its No. 1-A Tubb. The well drilled saturation in the Ellenburger lime from 5,749 to 5,783 ft. and recovered 5,710 ft. of 32.5-gravity oil on test, after which it made several heads of oil

Wildcat Gasser Burns

Fire early Friday morning, April 19, destroyed a wildcat well which had just come in as a gas discovery from the Delaware lime in northwestern Ward County. The well is Kenneth Slack's No. 1 Hayes, Section 148, Block 34, H.&T.C. Survey. Delaware lime had been topped at 5,005 ft. and an estimated 7,500,000 cu. ft. of gas per day was uncovered at 5,041 ft., top of the Delaware sand. A high wind was said to have blown the gas spray over near the boilers where it was ignited. The derrick was destroyed and the machinery seriously burned. As the week closed the fire was reported still out of control.

New Wildcat Tests

Four counties shared in as many new wildcat locations during the past week: Upton, Pecos, Dawson, and Terry. Continuing the search for deep production throughout the southern basin area, Plymouth Oil Co. staked location for an 8,000-ft. test in northern Pecos County. It is in the southwestern part of Section 104, Block 8, H.&G.N. Survey, about 3½ miles south of the Payton area and about 12 miles north of the Apco field.

Upton County, which has seen little wildcat exploration in the past 2 years, received a new test, B.C.&D. Development Co.'s No. 1 B. W. Owens. Location is 467 ft. from the north and 2,173 ft. from the west lines of Section 91, Block Y, G.C.&S.F. Survey, 1½ miles northeast of production in the Crane-Cowden field on the Crane and Upton County line.

Dawson County's new wildcat was staked by Ray Albaugh for No. 2 Robinson, 660 ft. from the north and west lines of Section 54, Block M, E.L.&R.R. Survey.

The new location in Terry County was made by Denver Producing & Refining Co. for No. 1 Ima Lewis, C SE SE SE Section 62, Block D.D., J. H. Gibson Survey.

Ector County Extension

Considerable proven acreage has been added to the link area between the Foster and Addis fields of Ector County by a wildcat 1½ miles southwest of the Foster field and about ½ mile east of the Addis area. The well is Forest Development Corp.'s No. 1 Moss, NE NE Section 37, Block 43, Township 2s, T.&P. Survey. Saturation was found from 4,094-4,121 ft. Casing was being run as the week closed and testing is expected to start the middle of this week.

Wasson Pipe-Line Proration

Pipe-line proration in the Wasson field of Yoakum and Gaines counties may be ended shortly following announcement that construction of the proposed carrier from the field to the Cosden Petroleum Corp.'s refinery at Big Spring will be started soon. Contract for the line has been signed, the job to be completed in 45 working days. Aloco Pipe Line Co. is the only purchaser in the field at present, taking 100 per cent of the allowable production of its connections, Humble Pipe Line Co. and Shell Pipe Line Co. taking only about 90 per cent. At the statewide hearing held at Austin last week, representatives of the two companies testified their companies would resume 100 per

(Continued on Page 233)

Texas and Louisiana Gulf

By NEIL WILLIAMS

Belle Chasse Is the Seventh 1940 South Louisiana Pool

HOUSTON, Tex., Apr. 22.—The Belle Chasse prospect, Plaquemines Parish, was added to the list of producing fields in coastal Louisiana as California Co.'s No. 1 Delta Minerals, Inc., flowed at the rate of 22 bbl. of 33-gravity oil per hour on a drill-stem test through perforated casing at 9,963-74 ft. The well was drilled to a total depth of 10,254 ft., and 7-in. casing was cemented at 10,188 ft. The well is situated in Section 2-15s-10e, about 6 miles northeast of the Barataria field. Tubing is being run and a potential test is scheduled to be made early this week. It is the seventh field opened in South Louisiana this year.

The La Place field, St. James Parish, was extended about ½ mile west by the completion of Pan American Production Co.'s No. 1 Godchaux. Drilled to 9,042 ft., 7-in. casing was cemented at 8,970 ft., and the well was completed through perforated casing at 8,890-8,900 ft. During a 13½-hour gage, through bottom-hole chokes, the well flowed 35 bbl. of distillate. The completion opens production from a new sand several hundred feet deeper than that in the discovery well which was completed through perforated casing at 8,115-22 ft.

Gulf Refining Co. opened production from a new sand on the east flank of the old Jennings field, Acadia Parish, with No. 42 Arnaudet, completed through perforated casing at 7,994-8,010 ft., for an initial production of 40 bbl. in 3 hours, flowing through a ½-in. choke. The hole is bottomed at 8,011 ft., and 5-in. casing was cemented on bottom. On the southwest flank, Shell Oil Co., Inc.'s No. 10 Community, perforated casing at 7,602-23 ft., and 7,642-82 ft. Initial production was 230 bbl. per day, flowing through various chokes.

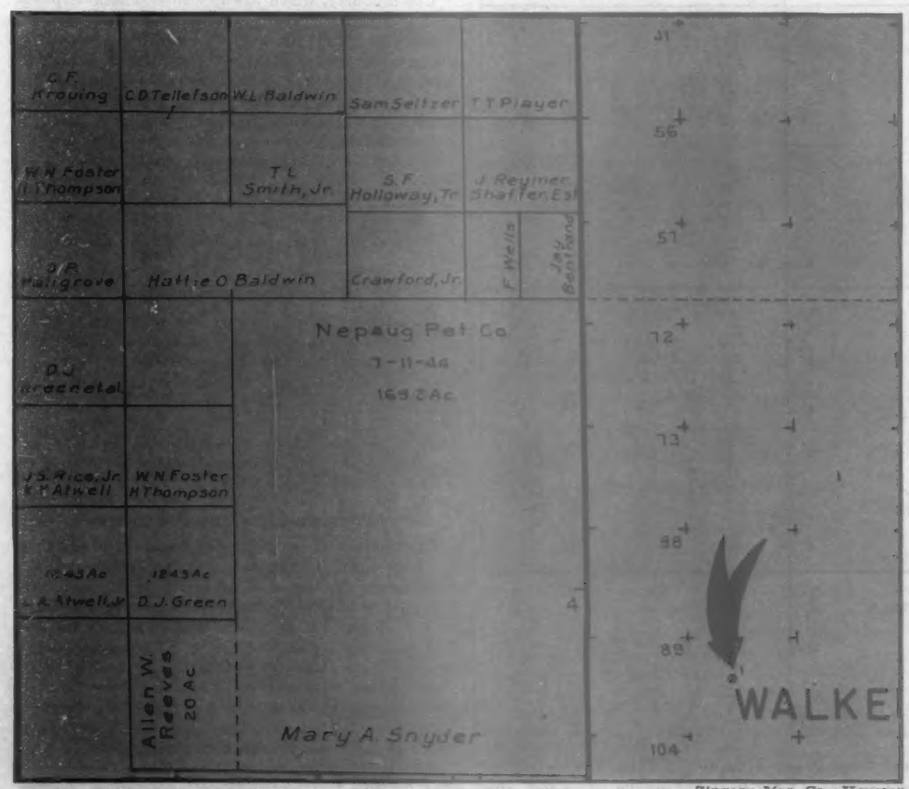
Location for a second test, was announced for the newly opened Neale field, Beauregard Parish. The location is on the Ira Spiers lease, in Section 26-3s-11w, about ½ mile south of the discovery well, and the well will be drilled by Atlantic Refining Co.

In the newly opened Bayou Pigeon field, Iberia Parish, Plymouth Oil Co. staked location for No. 1 Le Blanc, in Section 13-12s-10e, an east offset to the discovery well.

In the Erath field, Vermilion Parish, Texas Co. was preparing to retest No. 1 Vermilion Parish School Board, recently completed through perforated casing at 11,068-75 ft., for an initial production of 120 bbl. of fluid per day, of which 80 per cent was pipe-line oil and the balance salt water. The perforations have been squeezed off and the company is scheduled to test at approximately 11,375-85 ft. Grady Vaughn's No. 1 Boullion, about 1 mile east of Texas Co.'s operation, is drilling below 11,800 ft., and no shows of oil or gas have been reported.

Carter, Perrin and others' No. 1 Rutley-Wiseman, Barataria field, Jefferson Parish, is reported to be flowing pipe-line oil while testing a new sand at 8,700 ft. The well was drilled to 9,790 ft., and 7-in. casing was cemented at 8,891 ft. California Co.'s No. 1 State-Bayou, perforated casing at 8,197-8,216 ft., and flowed 230 bbl. per day through various chokes. The company's No. 1 Zeringue-Community is retesting after the well flowed oil and salt from perforated casing at 8,271-79 ft.

Texas Co. opened production from a shallow sand in the Lafitte field, Jefferson Parish, as No. 15 Lafitte, Section 20-17s-24e, flowed 352 bbl. per day before the well sanded up. This well was drilled to 10,135 ft., but was plugged back and completed through perforated casing at 4,830-33 ft.



Zingery Map Co., Houston

David B. MacDaniel's No. 1 Hattie Baldwin, Montgomery County, which is scheduled to test Tertiary Wilcox sand

Texas Coast

Along the Texas coast, and in the Tamina area, Montgomery County, David B. MacDaniel's No. 1 Hattie Baldwin continues to hold interest, although the well has failed to show any oil or gas while swabbing through perforated casing at 9,392-9,425 ft. This well has been drilled tight and the perforated depth is subject to correction.

In San Jacinto County and approximately 1 mile south of Sheppard, Harrison & Abercrombie made a location for No. 1 W. S. Dixon, a projected Tertiary Wilcox test in the Solomon Cole Survey. The location is about 2 miles north of the operators' No. 1 Larkin, a recent dry hole.

In Grimes County L. B. Session's No. 1 Barry is being watched with interest as it cores ahead in the Wilcox formation below 6,663 ft. Top of the Wilcox was 6,559 ft.

Important Dry Holes

The Rosenberg field, Fort Bend County, was further defined as Humble Oil & Refining Co. abandoned No. 1 Kroesch at a total depth of 8,338 ft. The well is about ½ mile southeast of the discovery well, and an electrical survey failed to show any oil or gas. In the same county and located on the extreme south flank of the Thompson field, Crosby Drilling Co. abandoned No. 1 George at a total depth of 8,612 ft. The Vicksburg was topped at 7,575 ft., and while an electrical survey was being made, the well flowed hot salt water.

J. F. Hutchins' No. 2 A. P. Borden, the discovery well of the Mackay field, Wharton County, completed in February at 4,816 ft. as a small producer with a high gas-oil ratio, showed an increase in production the past week when tubing pressure dropped from 1,450 lb. to 600 lb., and on a 24-hour gage, ending April 17, the well flowed 78 bbl. of 34.8-gravity oil per day through a 7/32-in. choke, with tubing pressure 620 lb.

Approximately 2 miles north of the Seabreeze field, Chambers County, Sun Oil Co. was preparing to make a drill-stem test at No. 1 Smith, after coring oil and gas showings. The hole is bottomed at 8,549 ft., and an electrical survey showed favorable indications at 7,591-98 ft.; 7,700-7,705 ft.; 8,136-46 ft., and 8,530-40 ft. The showings were confirmed by sidewall cores and casing is expected to be cemented for a production test.

An extension was indicated for the Willow Slough area, Chambers County, as Sun Oil Co.'s No. 1 Jackson, topped sand showing oil and gas at 8,512 ft., and the hole is bottomed at 8,522 ft., where a drill-stem test was being made.

Approximately 4½ miles from Seabrook and offshore from Chambers County in Galveston Bay, Humble Oil & Refining Co. staked locations for two wildcats, No. 1 State in Section 247, and No. 1 State, in Section 288.

In the Spurger area and about ½ mile north of Wilcox production at Joe's Lake, Republic Production Co. and Houston Oil Co. are cementing casing, preparatory to testing No. 3 Sterne. The well is bottomed at 5,992 ft. and is expected to be completed as a distillate producer as three drill-stem tests at intervals from 4,927-5,095 ft., tested several hundred pounds of working pressure and distillate-cut drilling mud.

Hebert, Smith and Titanic Oil Co.'s No. 1 Boyt, Liberty County, is scheduled to be deepened from 8,865 ft. This well made its appearance as a possible pool opener several weeks ago when tested at 8,800 ft., and at 8,535-75 ft., but due to salt water encroachment and excessive gas pressures, no satisfactory test was obtained. The perforations have been squeezed off and the operators will attempt to deepen the hole with 3-in. drill pipe.

In the Chocolate Bayou field, Brazoria County, Glenn H. McCarthy was in the process of testing No. 1 Andrau,

(Continued on Page 222)

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ont., Apr. 20.—Official figures just issued show that crude and naphtha production from all Canadian fields in 1939 totaled 7,837,503 bbl. compared with 6,965,457 bbl. in 1938. Comparative figures for the various provinces follow:

Province—	1938 (bbl.)	1939 (bbl.)
New Brunswick	23,081	20,101
Ontario	172,641	205,978
Alberta 6,742,039		7,594,411
Northwest Territories	27,696	17,013

Natural-gas production increased from 33,444,791,000 cu. ft. in 1938 to 35,394,087,000 cu. ft. in 1939.

Crude production from all Canadian fields in January totaled 486,859 bbl. compared with 502,920 bbl. in December and 533,166 bbl. in January 1939. New Brunswick production decreased from 1,815 bbl. in December to 59 bbl. in January. Ontario was up from 15,487 bbl. in December to 15,750 bbl. in January. Alberta decreased from 485,618 to 471,050 bbl. Natural-gas production marketed from all Canadian fields in January totaled 4,865,120,000 cu. ft. compared with 4,015,133,000 cu. ft. in December and 4,118,179,000 cu. ft. in January 1939.

In Section 13-19-3w5, West Central Turner Valley, Arrow Royalties' No. 1, LSD 16, finished at 8,102 ft. after getting the Madison lime at 7,620 ft., produced 981 bbl. in 15½ hours after acidizing only the upper zone of the lime; indicating a possible 1,600 bbl. a day. The lower porous horizon has since been acidized and further tests are in progress. Indications are for a very large producer. The early tests showed gas-oil ratio of 1,240 ft., with casing-head pressure of 1,530 lb.

Arrow's No. 1 tested a new area north and west of the original West-Central production. It extends the proven field a considerable distance. The completion is expected to result in considerable new activity. Arrow's No. 2 will be started on the adjoining LSD as soon as No. 1 is definitely completed, and Sun Ray Petroleum Corp.'s No. 1, LSD 8, same section, ½ mile south, will probably resume from 3,000 ft.

In Section 5-19-2w5, Vanpeg Royalties' No. 1, LSD 9, finished at 7,072 ft., some 657 ft. in the Madison, yielded 8 bbl. an hour on initial test, later increasing to 12 bbl. It has been acidized and is making official test for allowable, with indications of a potential around 500 bbl. a day.

In Section 6-19-2w5, East Crest Oil Co.'s No. 5, LSD 9, finished 446 ft. in the Madison at 7,762 ft., was given a fourth shot of 1,000 gal. of acid, and made 20 bbl. an hour from the lower porous zone. The upper porous zone will be acidized before making official test.

Tests in the Lime

In Section 18-19-2w5, Calmont-Northwest's No. 1, LSD 3, got the Madison limestone at 7,172 ft. and is deepening below 7,248 ft. after cementing. Davies Petroleums' No. 5, LSD 10, same section, got the lime at 6,942 ft. and cemented production string at 6,960 ft. The Davies well is east, and Calmont-North's No. 1 southeast of Arrow Royalties' No. 1 producer.

In Section 7-19-2w5, Royalite Oil Co.'s No. 48, LSD 10, got the Madison at 7,087 ft. and cemented around 7,104 ft.

West Central Field

In West-Central Turner Valley, Section 6-19-2w5, Kamalta Oils' No. 1, LSD 1, is in the Blairmore formation below 7,300 ft. In Section 8-19-2w5, Southwest Petroleum Co.'s No. 4 has been located in LSD 4, immediately west of No. 3, which is a large producer.

Southwest Area

In Southwest Turner Valley, Northwest-Hudson's Bay's No. 3, LSD 15, Section 8-18-2w5, is below 7,555 ft. after getting the Home sand at 7,167 ft. Northwest-Hudson's Bay's No. 4 is located in LSD 14, same section.

In Section 17-18-2w5, Royalite Oil Co.'s No. 50, LSD 7, got the Home sand at 6,780 ft. and is below 6,985 ft. and getting close to the Kootenay.

In Section 20-18-2w5, York Oils' No. 3, LSD 3, is in the Blairmore formation below 7,287 ft.

In Section 29-18-2w5, Commoil's No. 3, LSD 13, is below 5,645 ft. after getting the cardium marker at 5,470 ft.

In Section 32-18-2w5, Royal Canadian Oil Co.'s No. 4, LSD 12, is below 7,358 ft. and getting close to the Fernie shale.

North Turner Valley

In Section 15-20-3w5, North Turner Valley, Anglo-Phillips' No. 1, LSD 14, got the brown sand at 8,430 ft. and is deepening to the Madison, expected around 8,700 ft. Some repetition of formations has been encountered. The test is well down the west flank and may have to go to 9,200 ft. to get the producing horizon. In the southwest area Scottish Petroleums' No. 1 got salt water at slightly less than this depth, but drilling in the north field has not been sufficiently extensive to indicate the water level there.

In Section 28-20-3w5, Home Oil Co.'s No. 5, LSD 16, is working on cellar. Home's No. 6 has location in LSD 9, same section. Home's No. 1, LSD 8, Section 33-20-3w5, is working on cellar.

Steveville Field

In the Steveville field, east of Calgary, Standard of British Columbia's No. 1 Princess, LSD 13, Section 22-20-12w4, is deepening in the Devonian limestone below 5,353 ft. after killing off a gas flow of 65,000,000 cu. ft. a day encountered at 5,254 ft. Cores are being taken every 15 ft.

Tests in the Foothills

On the Brazeau structure in the northern foothills west of Edmonton, Home Oil Co.'s No. 1, LSD 16, Section 7-43-17w5, is below 7,595 ft. with the lime-

(Continued on Page 242)

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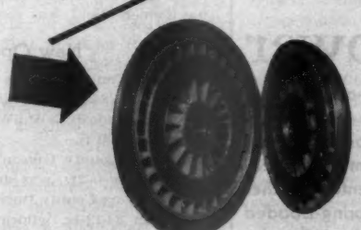

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Flying on standard aviation fuel and lubricants, the Beechcraft airplane with the Snow Cruiser has established a new altitude record in the intense cold of the Antarctic sky, according to information which has reached Standard Oil Co. of Indiana.

On its final hop to measure cosmic rays before the permanent night of the South Polar regions should stop all flying the plane climbed to 21,050 ft. The altitude reached is reported the highest by several thousand feet ever reached by any plane flying in the Antarctic.

Gulf Coast Fields

(Continued from Page 220)

and No. 2 Houston Farms Development Co. The Andrau test is bottomed at 11,423 ft., with 4-in. liner set on bottom. Five and one-half inch casing was cemented in No. 2 Houston Farms at 11,170 ft., and the well is being tested through perforated casing at 11,080-83 ft. The completion of these wells as commercial producers would establish a new deep-production record for the Texas coast.

Locations for two wildcats were announced for the Ogburn prospect, Harris County. Both tests will be drilled by Joyce Richardson. They are No. 1 Emil Marks and No. 1 A. and H. Marks in the Beard Survey. Protection acreage is held by various major and independent companies. Contract depth is 7,500 ft.

TEXAS GULF COAST COMPLETIONS IN PROVEN FIELDS

Brazoria County

Manvel field: Texas Co.'s No. 24-A Belcher, 5,687 ft., 440 bbl., ¼-in. choke.

Chambers County

Anahuac field: Humble Oil & Refining Co.'s No. 16 Zappe, sand 7,026-80 ft., 671 bbl., ¼-in. choke. Barbers Hill field: Texas Gulf Producing Co.'s No. 31-B Kirby Petroleum Co., sand 5,170-5,204 ft., 597 bbl., ¼-in. choke. Cedar Point field: Standard Oil Co. of Texas' No. 42-11 State, perforated casing 5,950-90 ft., 144 bbl., ⅛-in. choke. South Cotton Lake field: Salt Dome Oil Co.'s No. 3 Williams, sand 6,519-26 ft., 132 bbl., 3/16-in. choke.

Fort Bend County

Orchard field: Gulf Oil Corp.'s No. 59 Moore, 6,826 ft., 32 bbl., ¼-in. choke. Thompson field: Crosby Drilling Co.'s No. 1 George, 8,612 ft., dry and abandoned. Gulf Oil Corp.'s No. 9-Y Wolters, sand 4,252-4,315 ft., 134 bbl., ⅛-in. choke. Humble Oil & Refining Co.'s No. 28-Y Davis, sand 4,336-50 ft., 102 bbl., ⅛-in. choke.

Harris County

Clear Lake field: Humble Oil & Refining Co.'s No. 37-C West, 5,908 ft., 144 bbl., ⅛-in. choke. Fairbanks field: Gem Oil Co.'s No. 5 White, sand 6,830-41 ft., 114 bbl., ⅛-in. choke.

Jackson County

West Ranch field: Magnolia Petroleum Co.'s No. 62-A West, perforated casing 5,122½-55½ ft., 217 bbl., 3/16-in. choke. Mauritz field: Seaport Oil Corp.'s No. 1 Combs, sand 5,608-48 ft., 165 bbl., ⅛-in. choke.

Jefferson County

Clam Lake field: Shell Oil Co., Inc.'s No. 4 McFaddin, 6,524 ft., 152 bbl., ⅛-in. choke. La Belle field: Sun Oil Co.'s No. 6 Broussard, perforated casing 8,216-46 ft., 51 bbl., ¼-in. choke. Lovells Lake field: Humble Oil & Refining Co.'s No. 4-B Steinhagen, perforated casing 7,697-7,711 ft., gas well. West Beaumont field. Stanolind Oil & Gas Co.'s No. 1 Treadway, 5,380 ft., 32 bbl., 11/64-in. choke.

Liberty County

Hardin field: Atlantic Refining Co.'s No. 3-A Humphrey, sand 7,574-90 ft., 313 bbl., ¼-in. choke.

Matagorda County

Markham field: Hamill & Hamill's No. 1 Hudson, 1,550 ft., dry and abandoned.

Wharton County

Withers field: McDannald Oil Co.'s No. 2 Franz, sand 5,536-46 ft., 108 bbl., ⅛-in. choke. Texas Co.'s No. 50-B Pierce, sand 5,378-94 ft., 109 bbl., ⅛-in. choke. Texas Co.'s No. 70-C Pierce estate, sand 5,389-98 ft., 99 bbl., ⅛-in. choke.

Oklahoma Fields

(Continued from Page 216)

Caddo-Kiowa Counties

Ohio Oil Co.'s No. 7 Lackey, SW SE NW Section 11-5-9w, Cement field, Caddo County, topped Rowe sand at 3,363 ft., was bottomed at 3,428 ft., casing was perforated at 3,363-80 ft., and it flowed 269 bbl. of oil in 4 hours, making daily potential of 1,617 bbl.

Magnolia Petroleum Co.'s No. 5 Hedlund, NW NW NE Section 11-5-9w, an old well, was reconditioned and recompleted at total depth of 4,582 ft., for 15,500,000 cu. ft. of gas daily.

In Kiowa County Shell Oil Co., Inc.'s No. 3 Ratliff, SE SW NE Section 19-7-17w, Hobart pool, was completed for 767 bbl. of oil daily at total depth of 1,201 ft.

Ohio Oil Co.'s No. 15 Pau-Kune, C SW SE Section 3-5-9w, Cement field, was moving in rotary tools.

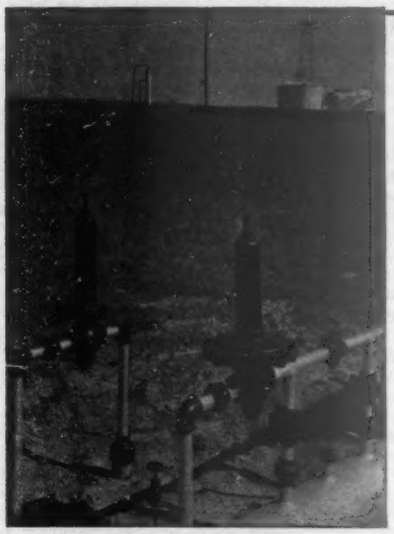
New Operations

Stephens County: George Pace's No. 18 fee, SW NE NW Section 28-2s-7w, drilling below 1,308 ft.; McAlester's No. 4 Wade B, NW SW NE Section 11-2s-8w, drilling below 1,400 ft.

In Carter County Gibson's No. 2 Martens, NW NW SE Section 20-4s-2w, was drilling below 422 ft.

In Oklahoma County Dorr's No. 1 Storamske, NE NE SE Section 34-13-1e, wildcat south of the Jones pool, had dug cellar and pits.

In Logan County Kerlyn Oil Co.'s No. 1 Kavanaugh, C W½ SW NW Section 1-15-4w, wildcat in the Navina area, spudded. Carter Oil Co.'s No. 1 Walker, C NE NE Section 33-17-4w, old well in the Crescent pool, plugged back from 6,245 ft. to 6,136 ft., was shot and was cleaning out.



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North Louisiana, Arkansas

By
GEORGE WEBER

Placid Oil Co. Outpost May Extend Olla Field 2,900 Ft.

SHREVEPORT, La., Apr. 20.—Possible extension of the new Olla field in La Salle Parish, North Louisiana, was the most interesting feature of the active development currently taking place in that area. Drilling elsewhere in the tristate district continued quiet, but wildcats, active and newly staked promise several points of interest over the next few weeks.

With the exception of the Placid Oil Co. (H. L. Hunt) No. 10 Louisiana Central Lumber Co., drilling tests in the vicinity of the Olla discovery showed disappointing results last week. Placid's No. 10, after taking side-wall cores down to 3,880 ft., set casing at 2,650 ft. Perforations were shot first at 2,205-16 ft., where 1,500 bbl. of fluid, consisting of 50 per cent salt water, the remainder wash water, mud, and oil, were recovered through open tubing in a 24-hour period. Operators have squeezed perforation points and reperforated at 2,200-05 ft. and 2,225-40 ft. in an effort to plug off the salt water. If this well is a success it will extend the field about 2,600 ft. north-northeast. Other active tests, with exception of the offsetting deep test by Hunt and Arkansas Fuel Oil Co. and a south offset test, have been either wildcats or extended outpost locations.

To the north in Caldwell Parish, Arkansas Fuel Oil Co. went back into No. 1 Louisiana Central, originally drilled to 7,528 ft., and after taking side-wall cores from 2,200 to 3,600 ft., all of which showed salt-water sand, 5½-in. casing was set at 3,653 ft. Perforations made at 3,315-20 ft. and 2,850-55 ft. showed salt-water recovery, and the test was abandoned.

In diagonal northeast offset to the discovery well at Olla, Hunt and Arkansas' deep test, No. 1 Goodpine Lumber Co., tested 3,000,000 cu. ft. of gas through perforations at 2,392-95 ft. and the owners plugged off and reperforated in an attempt to bring in oil production in the lower Wilcox zone. A south offset, Placid Oil Co.'s No. 11 Louisiana Central, also tested 3,000,000 cu. ft. of gas at 2,222-32 ft. and is plugging off and reperforating.

South Arkansas

The Fouke area in Arkansas continues active from the standpoint of leasing and royalty buying, although new drilling is generally awaiting the completion of Standard Oil Co.'s No. 1 Sturgis, discoverer of commercial oil production in the Paluxy formation at 3,584-3,600 ft. The Standard wildcat is drilling and coring below 7,340 ft. in search of possible deeper production, although the lower Glen Rose formation proved unproductive.

Throughout Miller County, Arkansas, and extending southwest into Cass County, East Texas interest is high and drilling of outposts and wildcats along the northeast-southwest graben trend is expected within a few weeks.

The Bright Star area of Miller County will have a wildcat test, with the staking of K. E. Jennings' No. 1 H. T. Wood in Section 33-18-28, about 10 miles due north of the Miller County end of the Rodessa field, near the Texas border.

In the deep Smackover lime pools of South Arkansas drilling continued fairly steady. Magnolia, almost drilled up, shows less drilling activity weekly, and Atlanta, located to the south, is emerging as the most active deep-drilling field. During the week, however, Atlanta received a setback in the abandonment of Hassie Hunt's No. 2 McWilliams, a north-edge test. The well showed salt water several days ago, and acidizing failed to improve its outlook. Flow valves failed to make a commercial producer of the test, and it was abandoned at 8,268 ft.

In the Dorcheat field McAlester Fuel Oil Co.'s No. 1 Sayers unit, two locations east of the discovery well, is washing in for a slight production extension. A study of the Dorcheat field, including a thorough analysis of its production to determine whether it may be classified as an oil or gas field, is under way, but the findings may not be announced for several weeks. Determination of the reservoir conditions indicating gas phase may bring changes in spacing and production schedules for the field.

To the east in Union County, the Nick Springs area, near El Dorado, is gaining in interest. The Delta Drilling Co.'s No. 1 Grace, recompleted recently at 3,466 ft., is flowing between 625 and 660 bbl. of oil daily with salt-water production off. This field is currently unprorated.

Production by Pool

Estimated daily gross production, all companies, for week ended April 19:

NORTH LOUISIANA

	Bbl.
Bellevue	480
Caddo, light	5,270
Caddo, heavy	2,165
Converse	505
Cotton Valley	*14,850
Cross Lake	4,505
De Soto and Red River	945
Elm Grove	295
Haynesville	2,705
Holly	60
Homer	2,775
Lisbon	5,550
Olla	230
Pleasant Hill	95
Rodessa	21,050
Sarepta-Carterville	†385
Sligo	1,350
Sugar Creek	690
Urania	2,830
Zwolle	1,895
Total North Louisiana	69,110

SOUTH ARKANSAS

Atlanta	1,100
Big Creek	35
Buckner	2,005
Champagnolle	1,145
Dorcheat	1,385
El Dorado	1,710
Lewisville	760
Lisbon	220
Magnolia	20,205
Miller County	285
Nevada	555
Nick Springs	575
Rodessa	2,335
Schuler	18,505
Smackover, light	1,705
Smackover, heavy	13,855
Stephens	520
Troy	1,270
Urbana	920
Village	1,165
Total South Arkansas	70,255

*4,260 bbl. is distillate. †90 bbl. is distillate. Rodessa Texas 23,320 bbl.

East Texas

Two important wildcats continued in Cass and Harrison counties this week, and announcement of an extensive drilling program in the Waskom field of the latter county was made. In Cass County E. A. Stiller's No. 1 Glass, Paxton Survey, is drilling below surface casing. The Harrison County test, Fohs Oil Co.'s No. 1 Sypert, in the Hooper Survey near Hallsville, is attracting much attention, and although information on the well's progress is not being made public, it is known to be drilling below 2,650 ft. The Arkansas Fuel Oil Co. has contracted for a maximum of 14 wells to be drilled to the Glen Rose and Travis Peak gas-condensate production in the Waskom field. Drilling in this field has continued slowly during the past months.

NORTH LOUISIANA COMPLETIONS

Caddo—Caddo Parish

C. J. Brown's No. 1 Muslow, Section 5-20-15, pumping 15 bbl., total depth 1,565 ft. Texas Co.'s No. 6 Hicks-Payne, Section 21-21-15, pumping 25 bbl. oil and 100 bbl. salt water, total depth 1,687 ft. W. & W. Oil Co.'s No. 5 Arkansas Fuel, Section 12-20-16, pumping 10 bbl., total depth 1,546 ft.

Wildcat—Caldwell Parish

Arkansas Fuel Oil Co.'s No. 1 Louisiana Central Lumber Co., C NW SW Section 31-12-3e, old well worked over, old total depth 7,528 ft., took side-wall cores 2,200-3,600 ft. showed salt water, abandoned.

Zwolle—Sabine Parish

J. T. Oglesby's No. 2 Sabine, 330 ft. from SE cor. NW SE Section 5-7-13, dry and abandoned, total depth 2,527 ft.

Monroe—Union Parish

Memphis Natural Gas Co.'s No. 6 J. B. Lankford, Section 3-21-3, 1,500,000 cu. ft. of gas, rock pressure 965 lb., total depth 2,200 ft.

ARKANSAS COMPLETIONS

Wildcat—Calhoun County

British American Oil Co.'s No. 1 Freeman Smith Lumber Co., C SE NE Section 17-15-13, total depth 4,790 ft., dry and abandoned.

Atlanta—Columbia County

Hassie Hunt's No. 2 McWilliams, 100 ft., south and east of C NE NE Section 16-18-19, total depth 8,268 ft., dry and abandoned.

Magnolia—Columbia County

Standard Oil Co. of Louisiana's No. 1-B Gunnels and others, 560 ft. north and 660 ft. east of SW cor. NW NW Section 20-17-19, 720 bbl., 21/64-in. choke, top porous lime 7,537 ft., total depth 7,569 ft.

Kentucky Fields

(Continued from Page 207)

is down 2,025 ft. in No. 5264 W. H. May, on Long Branch of Jones Fork.

WESTERN KENTUCKY

OWENSBORO, Ky., Apr. 22.—A 120-bbl. well in McClosky lime was the best of the five wells completed in western Kentucky fields in the past week in review. Three of the completions were oil wells and two were dry and abandoned. Six new operations were started. Following was the record of the week's activities:

Butler County, Silver City district: Cumberland Petroleum Co. and others' No. 5 Lee Hawkins, 10-bbl. well in Jones sand, total depth 546 ft.

Daviess County, Utica district: J. C. Ellis and The Petroleum Co.'s No. 7 A. T. Hansford estate, moving in. Handyville district: Master Oil Co.'s No. 4 E. W. Richmond estate, 75-bbl. well in Jett sand at 1,192-1,211 ft.

Henderson County, Corydon district: Sun Oil Co. and Kentucky Natural Gas Co.'s No. 4 Corydon unit, derrick up; No. 3 George F. Trigg, 120-bbl. well in McClosky lime at 2,617-29 ft., total depth.

McLean County, Island district: South Penn Oil Co.'s No. 9 H. K. and John Kirtley, dry hole at 1,554 ft.

Ohio County, Fordsville district: Mecca Oil Co. and others' No. 5 Betty Cullen, rigging up. Pleasant Grove Church district: Eureka Oil Co.'s No. 5 W. H. Davidson, location. Sunnydale district: Wanna Oil Co.'s No. 4 S. H. Smith, moving in. Pattyville district: C. S. Harmon's No. 1 W. J. Tuttle, dry hole at 319 ft.; No. 7, drilling at 250 ft. P. P. Murphy's No. 1 Floyd Walker, waiting for shot in Jett sand at 246-66 ft., total depth 268 ft.

Improvement in Production Indicated by 19 New Wells

By OTTO C. PRESSPRICH

SAGINAW, Mich., Apr. 22.—Michigan's oil production, its daily average down 2,500 bbl. a day in March, compared with February, spurted considerably last week as 19 of the 27 recorded completions were commercial oil wells with total initial potential of more than 3,800 bbl.

Among the new wells were four unusually good, compared to the usual run in recent weeks. One in the Wyoming section of Kent County had a potential of 600 bbl. a day after acid treatment. Another in the Wise pool in Isabella County, was good for 804 bbl. the first day after acid treatment. A third in Allegan's Overisel field rated 500 bbl., naturally, and the fourth, biggest yet in the developing Heath Township field of Allegan was good for 621 bbl., naturally.

March production approximated the 2,000,000-bbl. mark, totaling 1,926,030, a gain of 50,000 bbl. over February, but the daily average dropped 2,500 bbl. to 62,130.

The 356 producing wells in the Walker-Wyoming-Tallmadge district continued to be the state's leading source of supply, producing 530,000 bbl., but their individual average was below the prolific but more concentrated Freeman-Redding field of Clare County where 134 producing wells turned out 437,000 bbl. In all of Allegan County, with 451 wells producing, the total was 226,000 bbl. and Midland's Porter field held fourth place ranking with 147,000 bbl. from 341 producers. The new Wise pool in Isabella County made a big improvement, 34 wells showing daily runs of 2,155 bbl.

Seven of the ten completions in Allegan last week were producers, initial output ranging from 50 to 621 bbl. a day. There were three producer completions in Isabella County, four in Kent, one in Clare, small ones in Barry, Ogemaw and Ottawa counties. In addition to three dry holes in Allegan, wells were abandoned as dry in Berrien, Kent and Ottawa counties and a location was abandoned in Tuscola County.

MICHIGAN CRUDE-OIL RUNS
Daily Average in March

Pool—	Wells	Bbl. per day
Porter—West	341	4,754
Greendale—Chippewa	185	1,297
Geneva—Midland	2	12
Sherman—Isabella	58	1,317
Wise—Isabella	34	2,155
Vernon-Leaton—Denver	78	785
Freeman—Redding	134	14,110
Grant—Clare	3	2
Beaverton	20	129
Edenville	28	353
Bentley—Gladwin	35	389
Buckeye-Wicklund—Oard	318	3,163
Ogemaw	228	1,374
Secord—Gladwin	2	6
Adams—Arenac	14	131
Clayton—Arenac	51	1,182
Tuscola	5	0
Saginaw Bay area	57	96
Birch Run	25	35
Dundee—Monroe	8	304
Montcalm County	36	334
Allegan—all pools	451	7,296
Holland—Ottawa	1	99
Zeeland—Ottawa	2	29
Muskegon	64	71
Walker-Wyoming—Talmadge	356	17,115
Bloomingdale—Columbia	272	5,576
Bangor (Van Buren)	10	32
Total	2,818	62,130

Interest in exploration in Central Michigan was held by C. L. Maguire's No. 1 Clark in Section 32 of Warren Township, Midland County. The well already was at a depth of 4,663 ft. Tools were lost and the operators plan to drill by them for a test of the Sylvania. Very few Sylvania tests have been made.

Of the 26 new drilling permits issued during the week by the state Conservation Department, nearly all were for tests in southwestern Michigan. Nine will be drilled in Allegan County, 10 in the Kent-Ottawa sector, 4 in Monroe, 2 in Reynolds Township of Montcalm County, where Taggart Brothers plan extension tests to the west of the Amble gas field. A wildcat test for oil is scheduled for Ravenna Township, Muskegon County, near the Ravenna gas field.

Following is the completions summary for last week:

Allegan County

Fillmore Township (4n-15w)—Century Oil & Gas Co.'s No. 1 William Schaap, NW NW NE Section 2, was a dry hole and abandoned at 1,641 ft.

Heath Township (3n-14w)—W. Spencer Cook's No. 1 George Essink, SE SE NE Section 4, completed at a depth of 1,424 ft., had first-day natural production at the rate of 621 bbl. Frank S. Vahue's No. 1 John Klein, C W½ SW NW Section 10, produced 125 bbl. a day from a depth of 1,530 ft. after being acid-treated. Fortney Oil Co.'s No. 1 J. Schaarf, C N½ NW NE Section 17, was dry and abandoned at 1,458 ft.

Overisel Township (4n-14w)—N. R. Dodd's No. 4 J. O. Schaap, NE NW SW Section 34, rated 500 bbl. a day, naturally, from a depth of 1,472 ft. Wiser Oil Co.'s No. 5 Justin Jurries, SW SW SE Section 35, completed at 1,518 ft., produced 150 bbl. a day, after it was acid-treated. Sprenger Brothers' No. 2 Graveling, NW SE SE Section 34, was dry and abandoned at 1,735 ft.

Salem Township (4n-13w)—Socony-Vacuum Oil Co., Inc.'s No. 3 D. H. Kluinsteker, NW NW NW Section 10, completed at 1,643 ft., was producing at the rate of 157 bbl. a day. Bridger Basin Oil Co.'s No. 2 Bredewig, NW SE SW Section 15, was good for 60 bbl. a day, at a depth of 1,587 ft. Socony-Vacuum Oil Co., Inc.'s No. 1 H. & G. Weber, SW SE NW Section 14, had a production from a depth of 1,585 ft., of 63 bbl. a day. All had been acidized.

Barry County

Hope Township (2n-9w)—K. A. Fox and A. J. Fleming's No. 1 Lechlentner, SE SE NE Section 27, was completed at a depth of 1,825 ft., the well making 20 bbl. a day, after acid treatment.

Berrien County

Coloma Township (3s-17w)—Clapsaddle & Harris' No. 2 Brant, SW NW NW Section 17, was dry and abandoned at 892 ft.

Clare County

Redding Township (19n-6w)—Pure Oil Co.'s No. 3 Bert Douglas, C N½ NW SW Section 34, completed at 3,925 ft., was rated good for 179 bbl., naturally, on its initial test.

Isabella County

Wise Township (16n-3w)—J. V. Wicklund Development Co.'s No. 1 William Leosh, SE SE SE Section 8, was completed at 3,737 ft., and after it was acid-treated, had an initial daily production of 110 bbl. Cities Service Oil Co.'s No. 1 Tubbs, NW SW SE Section 17, was good for 804 bbl. a day after being treated, total depth of 3,721 ft. Gulf Refining Co.'s No. 2 H. A. Russell, NE NW NE Section 20, was producing 133 bbl. a day from a depth of 3,717 ft. The hole was acidized.

Kent County

Walker Township (7n-12w)—Gordon Oil Co.'s No. 1 Grand Rapids Trust Co., SW SW NW Section 27, was producing 54 bbl. a day after being treated with acid, its total depth being 1,873 ft. H. C. Williams and others' No. 1 Forstrom, SW NW NW Section 27, was completed dry at 1,895 ft.

Wyoming Township (6n-12w)—After acid treatment, initial potential was 600 bbl. a day from Welsh Oil Co.'s No. 6 Pere Marquette Railway Co., SE SE NW Section 3, total depth 1,764 ft. R. A. Wells' No. 1 Kryon J. Whalen, SE SE NW Section 14, completed at 1,904 ft. depth, was increased in productivity to 90 bbl. a day. Norman F. Johnson's No. 1 Mary Murphy, N½ N½ SE NE Section 23, completed at a depth of 1,884 ft., is a 50-bbl. well.

Muskegon County

Fruitport Township (9n-15w)—Daily Crude Oil Co.'s No. 1 Charles Sheiling, NW NE NE Section 28, was dry and abandoned at 1,887 ft.

Ottawa County

Allendale Township (7n-14w)—Red-Man Oil Co.'s No.

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1 F. Nibbelink, NE SE NW Section 18, was abandoned as a dry hole at 1,753 ft.

Tallmadge Township (7n-13w)—H. C. Williams and others' No. 1 Wesley Kasperlik, SW SE SW Section 25, completed at 1,938 ft., and acid-treated, was producing 10 bbl. a day. Gulf Refining Co.'s No. 1 A. E. Rapp, SE NW SE Section 23, was good for 96 bbl. a day, after it was acidized, at total depth of 1,875 ft.

Ogemaw County

Mills Township (21n-3e)—Weber Oil Co.'s No. 3-A Mills estate, NW SW SE Section 36, had initial natural production of 33 bbl. a day from a depth of 2,444 ft.

Tuscola County

Akron Township (14n-8e)—Dougherty & Markey, Inc., abandoned location for No. 1 B. Norrington, SW SW SW Section 18.

Ohio Fields

(Continued from Page 207)

abandoned at 4,747 ft. with tools fast in the hole, top of the Trenton at 4,700 ft. The hole was dry.

In Athens County, Canaan Township, Ohio Fuel Gas Co.'s No. 2 L. D. Poston, Section 7, is good for 160,000 cu. ft., open flow, of gas; second Berea at 1,626-41 ft.

In Gallia County, Addison Township, Ohio Fuel Gas Co.'s No. 1 A. B. Burgy, Section 23, is a small gas well in the second Berea, gaging 60,000 cu. ft.; depth 1,589 ft.

In Guernsey County, Adams Township, Ridgeway and others' No. 1 I. P. Williams, Section 21, made 60,000 cu. ft. of gas, open flow, from the Berea at 1,040-45 ft.

In Hocking County, Ward Township, Preston Oil Co.'s No. 176 Sunday Creek Coal Co., Section 12, made 50 bbl. of oil the first 24 hours, after a shot in Clinton sand at 3,518-50 ft.

In Licking County, Perry Township, McClay Brothers' No. 1 J. B. Claggett, Section 4, made 40 bbl. of oil the first day after a shot and gaged 900,000 cu. ft. of gas, open flow; Clinton sand at 2,854-2,910 ft. In Mary Ann Township William Stricker and others' No. 4 Job R. Davis, Lot 8, fourth quarter, is a small Berea gas well, gaging 50,000 cu. ft.; depth 584 ft.

In Medina County, Spencer Township, Ohio Fuel Gas Co.'s No. 1 L. M. Simon, Section 7, is a gas well good for 1,150,000 cu. ft., open flow, from Clinton sand at 2,624-33 ft.

In Meigs County, Rutland Township, Roy Shuster's No. 1 Mary Benson, Section 10, is dry in the Keener; total depth 898 ft.

In Muskegon County, Harrison Township, Preston Oil Co.'s No. 1 Gertrude Williams, Section 30, made 20 bbl. of oil the first day after a shot in the Medina at 4,225-35 ft.

In Monroe County, Franklin Township, Wools Rocks Oil Co.'s No. 1 Raymond Mallett, Section 23, found the Berea sand missing, total depth 1,830 ft.

In Perry County, Clayton Township, Pure Oil Co.'s No. 2 Martha Miller, Section 18, gaged 1,100,000 cu. ft. of gas with a good showing of oil from Clinton at 3,221-35 ft., the well was not shot.

In the Yoker Valley field, Noble County, Beaver Township, Ohio Fuel Gas Co.'s No. 1 R. O. Law, Section 29, gaged 700,000 cu. ft. of gas, open flow, from the Berea at 1,618 ft. In Marion Township Glady Valley Oil & Gas Co.'s No. 1 D. R. Danford, found Berea dry, total depth 1,522 ft.

In Stark County, Lake Township, C. W. White estate's No. 1 William Kimmel, Section 27, made 1,400,000 cu. ft. of gas, open flow, in the Clinton at 4,538-50 ft.

In Tuscarawas County, Dover Township, Brendel Producing Co.'s No. 1 Robinson Clay Products Co., Lot 30, second quarter, had gas showing in the Clinton at 4,479-88 ft., shot failed to improve, and was abandoned at 4,623 ft.

In Washington County, Fairfield Township, H. F. McTaggart's No. 1 I. B. Irmine, Section 12, was deepened from the Berea through the shale to 2,900 ft., no sands were found, and the hole was abandoned. Wesley Township Bacheleo and others' No. 16 Ed Sheets, Lot 1098, had a settled production of 2 bbl. of oil per day from Peeker sand at 548-76 ft.

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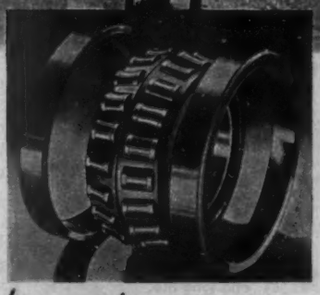

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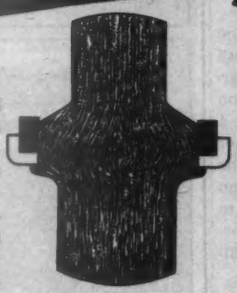

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Among the Drilling

LOFFLAND BROTHERS have the contract for a new deep Ordovician wildcat test in northern Pecos County, West Texas. The Plymouth Oil Co., which, through its subsidiary, Big Lake Oil Co., has a major interest in more West Texas Ordovician producers than any other company, has staked the new wildcat. It will be No. 1 Richard Levy, contracted to 8,000 ft. and located 466 ft. from the south and west lines of Section 104, Block 8, H.&G.N. Survey. The site falls about 17 miles northwest of the Apco field and about 7 miles south of the town of Grand Falls.

GROOVER & ROSE, contractors and producers of Albany, Tex., have completed a new field discovery and have been given contract for the first offset test. The discovery is in south central Jones County, West Central Texas, and was completed under contract for Thomas D. Humphrey, Dallas. Production in the discovery well was about 150 bbl. daily from the Cook sand topped at 2,184 ft. Humphrey's No. 2 Triplett, J. J. Hughes Survey 201, an east offset to the discovery, is being rigged up by the contractors for immediate spudding.

B. A. DUFFY, drilling contractor of Abilene, Tex., is drilling a Concho County, West Central Texas, wildcat which attracted considerable attention last week when shows of free oil were reported at 3,175-82 ft. The wildcat is Floyd C. Dodson's (San Angelo) No. 1 Robert Wilson, northwest part of the Thomas Green Survey 1, 10 miles southwest of Eden. At last reports the test was shut down for casing.

RICHARDS & HOLLOWAY, INC., Tyler, Tex., has been given the drilling contract for a scheduled 5,000-ft. Woodbine sand wildcat test in northern Smith County, eastern Texas. The test will be drilled for Cameron Corp. of New York and will be No. 1 Simpson, Walters Survey, 3 miles northeast of Winona. Materials are being moved in for immediate spudding.

CARPENTER-CHRISTIAN DRILLING CO. is moving equipment to Harris County, Texas, for two wildcats which will be drilled in the Ogburn area for Joyce Richardson. Contract depth of each well is 7,500 ft.

S. B. ROBERTS, drilling contractor and producer of Abilene, Tex., has staked location for a ½-mile-north outpost to the recently discovered Palo Pinto lime field in Haskell County, West Central Texas. It is No. 1 Pardue estate, SE S½ N½ Section 1, S.F.I.W. Survey, about 4 miles northeast of the town of Stamford.

GREEN & OWENS, contractors in West Central Texas, have been given the drilling job on a new wildcat test in Taylor County. It is Yehudi Oil Co.'s No. 1 J. W. Betes, R. Ortiz Survey, 3 miles north of Buffalo Gap. It is on a block of 3,200 acres and is contracted to the Swastika sand horizon expected at about 2,600 ft. Should this level fail to yield commercial production the operator will consider deepening.

ALLEN & MORRIS received contracts from W. R. R. Oil Co. for 2 new wells to be drilled in Nueces Bay, offshore from the East White Point field, Texas. A new operation was started in the Agua Dulce field for Union Producing Co., while in the West Ranch field, Jackson County, drilling was started on American Liberty Oil Co.'s No. 7 Ward.

GLENN McCARTHY is attempting to open a new producing record for the Texas coast as production tests were under way at both of his wells located in the Chocolate Bayou field, Brazoria County. Each well was drilled below 11,000 ft., and the production tests were scheduled to be made below this horizon.

LOFFLAND BROTHERS extended distillate production in the South Jennings field, Jefferson Davis Parish, Louisiana, with the completion of Stanolind Oil & Gas Co.'s No. 1 Morgan. The company has two other rigs operating in this field for the same company, and the rig used on the completed well is being moved to a new location. The company's operation in Beauregard Parish is drilling below 8,400 ft.

HENDERSON COQUAT extended production in the Wade City field, Jim Wells County, Texas, with the completion of his No. 1 Pundt. The completion extends production about ½ mile and opens the way for a large-scale drilling program.

ROWAN DRILLING CO. is preparing for a completion test at Tide Water Associated Oil Co.'s No. 7 Buras Levee Board, a 10,000 ft. test located in the Venice field, Plaquemines Parish, Louisiana. On the Texas coast drilling was started on the company's No. 1 Hubbard, a projected 10,000-ft. wildcat, located southwest

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of the town of Alvin, in Brazoria County.

NICKLOS DRILLING CO. is nearing the 10,000-ft. horizon on Continental Oil Co.'s No. 1 Bender, a projected 12,000-ft. wildcat in Montgomery County, Texas. The company has started a new wildcat operation north of the Tepetate field, Louisiana, for Continental Oil Co., and has two operations in the Villa Platte field for the same company.

PAUL DORAN, Centralia, Ill., completed a 429-bbl. producer in the Devonian lime in Section 18-1n-1e, Centralia field, Marion County, last week. The Devonian pay was topped at 2,897 ft. and the hole drilled to 2,954 ft., pipe was run to bottom and perforated at 2,896-2,910 ft. and the well then acidized with 5,000 gal.

LaSALLE Drilling Co. reported it had reached a depth of 1,625 ft. on its No. 1 Wall, SW NW NE Section 9-6n-13w, Crawford County, Illinois. The Ste. Genevieve lime was topped at 1,465 ft.

TAYLOR DRILLING CO., Centralia, Ill., completed two good wells in the Clinton County side of the Centralia townsite development. Its No. 4 Baker, SE cor. SW SE Section 12-1n-1w, after a 1,000-gal. acid treatment, flowed 1,000 bbl., while its No. 3 Baker, NE cor. SW SE of the same section, flowed 1,605 bbl. in 20 hours through the casing without an acid treatment.

ROBEY DRILLING CO., Tulsa, has the new rig which it recently purchased at work on the Texas Co.'s No. 25 D. Young, Section 21-2n-2e, the Salem field. The same company has nearly completed the Texas Co.'s No. 29 K. Wayman, Section 31-2n-2e, in the Devonian lime and is drilling ahead at 2,600 ft. on another Devonian test, the Texas Co.'s No. 13 F. E. Miller, Section 32-2n-2e.

O. C. MYERS, Weleetka, Okla., drilling contractor, drilled to 2,520 ft. at Edwards, Johnson & Minick's No. 1 Long, Section 1-6n-5e, wildcat in Seminole County, Oklahoma, and was preparing to core Senora sand. It was reported running structurally high and was given a good chance to open a pool.

SUMMIT DRILLING CORP. is drilling a well for Paul McIntyre and Tulsa associates, No. 3 Peter Simmer, in SE SW NW Section 18-10-11e, in the West Weleetka pool of Okfuskee County, Oklahoma. Operators have been preparing to drill plug and test the Booch sand around 2,100 ft. Summit and McIntyre's No. 6 Steil, in SW NE SW Section 18, was drilling around 1,600 ft.

SIMPSON & ROODHOUSE Drilling Co. has been digging cellar and pits for No. 1 Mehl, its new wildcat in NW NE SE Section 33-6n-3e, in the West Asher region of southern Pottawatomie County, Oklahoma.

HELMERICH & PAYNE, INC., Tulsa, is drilling No. 1 Hefner-B, in NE NW SW of Section 12-1n-5w, in the Doyle pool of Stephens County, Oklahoma, below 2,265 ft.

TABER & COLEMAN, Tulsa, at No. 1 McKinney, in C E½ SE SW Section 11-10-4e, east of Shawnee, in Pottawatomie County, Oklahoma, have the rig up.

SUMMITT DRILLING CO. completed a Prue sand pool opener in Section 6-15-5e, Lincoln County, Oklahoma, and Portable Drilling Co. completed Hunton lime pool opener in Section 24-17-2e. Both contracting companies have headquarters in Tulsa.

EASTERN DRILLING CO. has contract to drill Harris & Holmes' No. 1 Newkirk, NE cor. Section 11-61-11w, Knox County, in northeastern Missouri, where operations are being resumed after a winter shutdown.

M. J. LEWIS, Wichita Falls., Tex., contractor, has spudded at Uhri Oil Co.'s No. 1 Ogle, NE NW SE SE Section 9-1n-14e, wildcat in Richardson County, Nebraska, west of the Falls City discovery well.

E. K. CAREY DRILLING CO., McPherson, Kans., was preparing to complete Republic Natural Gas Co. and others' No. 1 Johnson, Section 19-20-5w, midway between the Bornholdt and North Bornholdt pools, McPherson County, after erection of tankage is completed. Estimates of production from chat at 3,286 ft. ranged as high as 200 bbl. of oil an hour. It will connect the two pools.

ROBERT W. ATHA, Mount Pleasant, Mich., contractor and operator, has the contract to drill Gulf Refining Co.'s No. 2 Rapp, NE NW SE Section 23-7n-13w, Tallmadge Township, Ottawa County, Michigan. The Gulf company recently completed its first producer in the Walker-Tallmadge pool at No. 1 Rapp, SE NW SE Section 23, for 92 bbl. of oil daily.

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Rocky Mountain Area

By
T. R. INGRAM

Lance Creek's Sundance Pay Extended; Work on Increase

DENVER, Colo., Apr. 22.—The Sundance sand horizon in Lance Creek was extended ¼ mile on the northeast in Ohio Oil Co.'s No. 8 State Land, which flowed 60 bbl. an hour. Two inside wells were completed, Ohio Oil Co.'s No. 14 Carrie Putnam for 575 bbl. from the Joss sand and Continental Oil Co.'s No. 18 Tom Bell for 600 bbl. from the Leo sand. Marvel Oil Co.'s No. 1-G in the La Barge field was drilled deeper and picked up a second sand which pumped 35 bbl. per day. Sinclair-Wyoming Oil Co.'s No. 92-A in Lost Soldier made 250 bbl. first 24 hours. Yale Oil Corp.'s No. 1 Simonson, an outside well in the Garland field pumped 200 bbl. per day, of which half was water.

In Montana there were three completions in Cut Bank in the Texas Co.'s No. 1 Unit 11, the Glacier Production Co.'s No. 4 Van Ormer, and Annand-Hutchings' No. 4 Federal Land Bank. Kevin-Sunburst had three completions, the best being the Superior Petroleum Co.'s No. 3 Haugen, the record well of the year for the field, which flowed 410 bbl. first 24 hours from a break in the lime.

New operations include a Sundance sand test in the Horne Valley district in Carbon County, Wyoming, by the MacKinnie Oil & Drilling Co.; one in the Lost Soldier field in the Sinclair-Wyoming Oil Co.'s No. 93-A; a shallow test in the Cumberland district, Uinta County, by the Elynor Oil Co.; one in the Hardin district, Big Horn County, Montana; one each in Fallon and Fergus counties; five in Cut Bank and one in Kevin-Sunburst.

NEW MEXICO

The abandonment of six southeastern New Mexico wildcats during the past week was only partially offset by the announcement of a deep exploratory test about 20 miles south of the Hobbs field in southeastern Lea County.

The abandoned wildcats included one in Chaves County and five in Eddy County, one of the five being an abandoned location. Three of Eddy County's wildcats were abandoned but not plugged, indicating that at some future date they may be carried deeper.

Gulf Oil Corp. is erecting derrick for No. 1 Amanda A. Brinkard, C NW SE Section 25-22-37, about 20 miles south of the prolific Hobbs field, for a test of the Hobbs zone. Should the zone prove barren the hole will be plugged back for completion in the Skelly sand.

In Eddy County J. B. Muicock is moving in material for No. 1 Etz, SW SW Section 25-16-30. The semi-wildcat is located 2 miles southwest of Everts Drilling Co.'s No. 1 Grier, a small producer. It is about 8 miles east and slightly south of the main part of the High Lonesome field in the northern part of the county.

When the gas-oil-ratio survey being made of some 2,900 wells in Lea and Eddy counties is completed later this month or early in May, it is expected that the Conservation Commission will shortly afterward issue a final order placing all fields on a volumetric withdrawal basis. This system will penalize wells producing with gas-oil ratios in excess of the figure set for the field in which they are located. These high-ratio wells will be allowed to produce only the amount of oil that could be produced under the ratio set for the field. Temporary maximum ratios have been used in the fields of these two counties for the past 2 months, and in consequence the total monthly allowables of many companies have been slightly reduced.

Eddy County

Everts' No. 1 Greer, SE cor. Sec. 31-16-31. P.B. 3,690 ft.; swbd. 5 B.O.P.D. for 7 days.
Everts & Moran's No. 1 Ranuz, NE NW Sec. 18-23-26. T.D. 375 ft.; S.D.
J. B. Cowden's No. 1 State, SW SE Sec. 3-17-29, between Root field and High Lonesome field. M.I.M.
G. A. Grober's No. 1 Wright, 1,080 ft. from N and W lines, Sec. 25-18-28. Tstg. S.O.&G. 1,382 ft.; est. 10 B.O.P.D.; S.D.R. 1,883 ft.
G. M. Cone's No. 1 Hare, NW NW NE Sec. 14-16-28, 3 mi. W of High Lonesome field. Loc.
Artesia Drlg. Co.'s No. 1 Hoffman, SE SE SE Sec. 14-17-24. S.D.R. 975 ft.; est. 1,250,000 cu. ft. gas at 938 ft.; prep. D.D. 975 ft.
L. E. Elliott's No. 1 Elliott, SE SE SE Sec. 24-17-29. S.S.O. 3,255-75 ft.; S.D.O. 3,482 ft.; made 1 B.O. and 4 B.W. in 24 hrs.; drlg. 3,659 ft.
Anderson's No. 1 Neeson, 330 ft. from W and 2,310 ft. from N lines, Sec. 4-16-30. S.D.R. 2,650 ft.
Clark & Cooper's No. 1 Gates, 1,980 ft. S and E lines, Sec. 20-16-27. Drlg. 2,490 ft.
Frederick's No. 1 Reed, 1,980 ft. from S and W lines, Sec. 23-24-38. O.W.D.D.; est. 1,500,000 cu. ft. gas at 2,300 ft.; prep. run csg. 2,893 ft.
Wilder's No. 1 Young, 1,650 ft. from N and W lines, Sec. 23-16-29. S.G. 1,805 ft.; S.D.O. 3,095 ft.
Sam Montgomery's No. 1 Kaltenback, 330 ft. from N and W lines, Sec. 24-16-27. Drlg. 2,240 ft.
Thomas & Bowers' No. 1 H. W. Etz, 2,310 ft. from N and 330 ft. from W lines, Sec. 13-16-30. Drlg. 3,059 ft.

Dona Ana County

Picacho O. & G. Co.'s No. 12 Armstrong, Sec. 15-23s-1w. Prep. run csg. 2,620 ft.
Slack & Mahres' No. 1 Simmons, Sec. 35-22s-5e. T.D. 2,785 ft.; S.D.O.

Chaves County

Farrar-Jones-Cunningham's No. 1 Samples, 330 ft. from S and E lines, Sec. 1-7-27. S.D.R. 98 ft.

Luna County

O. D. Berry's No. 2 Berry, Sec. 33-22-10. S.D.R. 145 ft.

Lea County

J. D. Barefield's No. 2 Stroup, 1,980 ft. from N and E lines, Sec. 12-18-32. Drlg. 3,355 ft.
Stogner & Weiner's No. 1 State, SE SE Sec. 30-12-32. Drlg. 690 ft.

Otero County

Ernest's No. 1 Ernest, Sec. 20-25-7. S.D.R. 2,993 ft.
Otero Oil Co.'s No. 1 State, SE NW Sec. 5-22-10. S.D. to straighten hole at T.D. 825 ft.

Socorro County

Joiner Oil Corp.'s No. 1 Belen grant, 2,310 ft. N and W lines, Sec. 16-3-1. S.D. 600 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Chaves County

A wildcat, Stanfield's No. 1 Bogle, SW NE Section 27-13-25, dry and abandoned at total depth of 1,409 ft.

Eddy County

A wildcat, G. R. Burke's No. 1 State, SE SE SW Section 36-16-24, abandoned but not plugged at total depth of 2,552 ft. In the Red Lakes field, Sam Sanders' No. 2 Berry, SW NE Section 24-17-27, 460-500 ft., 25 bbl. daily pumping after shot. In the Jackson field, Aston & Fair's No. 1 Brigham, SE SE Section 31-17-30, 2,839-49 ft., 80 bbl. in 3 hours through open tubing after shot. In the Loco Hills field, Continental Oil Co.'s No. 4-M-2 State, NE SE Section 2-18-29, 2,675-2,705 ft., 944 bbl. daily through ¾-in. choke after shot. Continental Oil Co. and Martin Yates, III's No. 4 Brainard, SE NW Section 11-18-29, 2,625-51 ft., 45 bbl. in 3 hours through ¾-in. choke after shot. Brainard & Guy's No. 3 Guy, NE NW Section 15-18-29, 2,531-62 ft., 200 bbl. daily through open tubing after shot. Sanders Brothers' No. 1-R Guy, NE NE Section 15-18-29, 2,600-2,985 ft., 50 bbl. in 10 hours through open tubing after shot. A wildcat, J. W. Elliott's No. 1 Cannon, SW SE Section 4-19-30, plugged and abandoned at 3,430 ft. A wildcat, Jack Harris' No. 1 Josey, SE SW Section 20-20-23, abandoned location. A wildcat, Trojan's No. 1 Grant, SW SW NE Section 33-20-25, abandoned but not plugged at total depth of 1,590 ft. A wildcat, A. E. Frazier's No. 1 Yates, NW NE Section 6-20-27, abandoned but not plugged at total depth of 817 ft.

Lea County

In the Maljamar field, B. Cockburn's No. 7-B Baish, NE NW Section 27-17-32, 3,896-3,955 ft., 100 bbl. through open tubing daily, naturally. In the Vacuum field, Humble Oil & Refining Co.'s No. 16-K State, SW NE Section 32-17-35, 4,390-4,650 ft., 75 bbl. in 6 hours through ⅞-in. choke after acid. Shell Oil Co., Inc.'s No. 3-T State, SW SE Section 33-17-35, 4,360-4,635 ft., 153 bbl. in 23 hours through 16/64-in. choke on tubing, naturally. In the South Eunice field, Texas Pacific Coal & Oil Co.'s No. 5-A Staye, 3,836-46 ft., 480 bbl. daily, naturally, through 20/64-in. choke. Gulf Oil Corp.'s No. 9-E Mattern, NE NW Section 12-22-36, 3,725-90 ft., 674 bbl. daily through open tubing, naturally. In the Penrose field, Gulf Oil Corp.'s No. 2 Eaves, SE NE Section 10-22-33, 3,600-3,700 ft., 59 bbl. daily through open tubing after shot and acid. Amerada Petroleum Corp.'s No. 1-PA State, NE SW Section 18-22-33, 3,660-3,724 ft., 174 bbl. in 10 hours through ¾-in. choke after acid. In the Skelly field, Skelly Oil Co.'s No. 8 H. O. Sims, SE SW Section 34-22-37, 3,543-3,660 ft., 172 bbl. in 15 hours through open tubing, naturally. In the Mattix field, Continental Oil Co.'s No. 8-A-20 Jack, NE NE Section 20-24-37, 3,494-3,565 ft., 72 bbl. daily through 24/64-in. choke after shot. Gulf Oil Corp.'s No. 2 Woolworth, SE SE Section 30-24-37, total depth 3,580 ft., plugged back from 3,657 ft., 1,217,000 cu. ft. gas daily through open tubing. In the Langlie field, Sun Oil Co.'s No. 3 Stuart, reworked and recompleted from the same depth for 87 bbl. oil and 1,500,000 cu. ft. of gas daily through 1-in. tubing choke.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc.'s No. 2 North Albuquerque, NE SE NW Sec. 19-11n-4e. S.D. 4,710 ft.
Norins Realty Co., Inc.'s No. 2 Pajarito, Sec. 22-9n-1e. S.D. 2,000 ft.

McKinley County

Petroleum Products Corp.'s No. 7 Hospah, C SW SW Sec. 36-18n-9w. Spd. to 50 ft.; S.D. acct. weather.

San Juan County

Continental Oil Co.'s No. 100 Rattlesnake, third deep well on the Rattlesnake structure, is shut down for orders at 7,407 ft., total depth. It was plugged back to 6,800 ft. and casing perforated to test, and after considerable experimenting in attempting to shut off water in an unidentified horizon, it pumped 62 bbl. of oil and 532 bbl. of water in 24 hours.

Angel Peak Oil Co.'s No. 10-B, C NW SE Sec. 24-28n-11w. Drlg. below 700 ft.
Claude Carroll's No. 1 Cornell, C SE NE Sec. 11-29n-12w. M.I.C.T. for test to gas sd.
Kutz Deep Test, Inc.'s No. 1 Govt., C NW NW Sec. 25-28n-10w. Drlg. 825 ft.
Continental Oil Co.'s No. 100 Rattlesnake, SE NW NE Sec. 2-29n-19w. S.D.O. 7,407 ft.

Socorro County

Joiner Oil Corp.'s No. 1 Belen Grant, SE NW Sec. 16-3n-1e. Cmtd. 10-in. at 585 ft.; S.D.

Valencia County

C. A. Grober et al's No. 1 Fuqua, NE NE Sec. 19-5n-3e. T.D. 3,850 ft.; prep. to run 7-in.

COLORADO

Adams County

Derby Dome O. & G. Co.'s No. 2 Baxter, C SE SW Sec. 2-3s-66w. T.D. 2,020 ft.; C.O. to bttm.; prep. to cre.

Custer County

Henry Donnelly's No. 1 Hodges, SE NE Sec. 26-21s-69w. Dpnd. to 1,662 ft.; S.D. for csg.

El Paso County

F. F. Hintze et al's No. 1 State, CEL SE SE Sec. 16-11s-66w. T.D. 1,035 ft.; mudded 8¼-in. on bttm; drlg. ahead.

Huerfano County

Ira E. Miller, and others' No. 1 Walter Hamilton, east of La Veta, which was temporarily abandoned last fall at 1,365 ft. without plugging, has moved in rig and preparing to resume to go to 4,000 ft.

Ira E. Miller, et al's No. 1 Hamilton, SE SE NW Sec. 20-29s-67w. T.D. 1,365 ft.; R.U. to res.
I. E. Siderman-White et al's No. 1 Martines, C SW NE Sec. 33-26n-67w. Drlg. below 1,200 ft.

Jackson County

W. N. W. Corp.'s No. 1 North Park Coal, NW NW Sec. 18-9n-78w. Drlg. 4,350 ft.; carrying 8¼-in. below 3,000 ft.; show carbon dioxide gas.

Larimer County

Ed. Shogren, et al's No. 1 Frazier, SE Sec. 31-4n-69w. Drlg. 860 ft.; prep. to U.R. 6¼-in. to set at 760 ft.; S.O. one bir. per day at 760-95 ft.

La Plata County

Nick Spatter's No. 1-X Bryce, C SW SW Sec. 31-33n-9w. Drlg. gr. sh. and L. shls. 3,335 ft.

Logan County

West Plains Oil Co.'s (formerly West Plains Dev. Co.) No. 1 Sheldon, SE NW SW Sec. 3-10n-55w. Drlg. below 1,200 ft.

Moffat County

Mountain Fuel Supply Co. has let contract to Manning & Martin, Inc., for its No. 5 Wilson, on the Hiawatha dome. It will go to around 2,600 ft. and will start in a 10-in. hole. Elevation 7,175 ft. Mountain Fuel Supply Co. began moving oil out of the Hiawatha field last fall, shipping it by truck to Rock Springs and then by rail to the plant of the Wasatch Refining Co., at Woodcross, Utah. Thus Hiawatha takes its place as a producing oil field as well as a gas field. The No. 1 Kuykendall, which the new well offsets on the northeast, is averaging 190 bbl. per day. Shipments from the field during March amounted to 5,503 bbl.

Mountain Fuel Supply Co.'s No. 5 Wilson, SW SW NW Sec. 23-12n-100w. R.U.R.

Great Divide Pet. Co.'s No. 1 Wyatt, SE Sec. 4-6n-92w. T.D. 724 ft.; res. C.O.; 10-in. frozen at 650 ft.

Montezuma County

McElmo Oil Co.'s No. 1 West, NE NW NE Sec. 31-36n-17w, S.D. 5,285 ft.

Park County

South Park Oil Co.'s No. 1 Leman, NE NE SE Sec. 34-11s-75w. Drlg. 7,222 ft.

Rio Blanco County

W. L. W. Royalty Corp.'s No. 1 Rector, SE Sec. 34-2n-102w. Loc.

Texas Co.-California Co.'s No. 3 Unit, NE NE NE Sec. 27-3n-94w. Drlg. 1,676 ft.

Routt County

L. C. Craig and L. C. Moore's No. 1-X Erwin, on the Trull structure 4½ miles west of Steamboat Springs, has cleaned out hole to bottom at 2,253 ft. and is waiting on 4½-in. casing, which has been delayed by bad roads, to shut off water before drilling ahead to the Sundance. The hole is 3 ft. in a sand. Gas in sufficient quantities to clean the hole and water were reported in the first Morrison sand at 2,165-2,240 ft. Second Morrison was at 2,240-51 ft.

L. C. Craig-E. L. Moore's No. 1-X Erwin, C SW NE Sec. 33-7n-85w. T.D. 2,253 ft.; W.O. csg.

Washington County

Thurman Oil Tr.'s No. 1 Ruby, NW NW SW Sec. 3-5s-52w. S.D. 1,800 ft. in sd.; will run csg., unload and test S.O.

WYOMING

Big Horn County

The Yale Oil Corp.'s No. 1 Simonson, Lot 53-55n-97w, an outside well on the south side of the Garland field a mile out from the nearest producer, was completed at 4,412 ft. in the Madison for 200 bbl. of fluid per day, 50 per cent water and 50 per cent oil, after acidizing with 1,000 gal. It had the top of the red beds at 2,820 ft. and the Embar at 3,565 ft. The 7-in. was cemented at 4,029 ft.

Frank S. Scott's No. 1 Robertson, SE SE SE Sec. 6-54n-93w. S.D. 650 ft.; indef.

Carbon County

The MacKinnie Oil & Drilling Co. and others, have let contract to Manning & Martin, Inc., for an important test on the Horne Valley structure in the Medicine Bow district, and will go to the Sundance at around 1,800 ft. Location is a west offset to Martin & Gallord's No. 1 Horne Brothers which was completed in the Muddy sand at 750-805 ft. last December for 7,000,000 cu. ft. of gas with a pressure of 325 lb. It was drilled to 1,200 ft. and had good shows of oil and gas in the Dakota and Lakota, but did not go to the Sundance. In 1938 C. D. Cunningham drilled less than half a mile to the northwest and found water in the Sundance at 1,719 ft., total depth. This well proved to be 292 ft. lower than the discovery well. Geology by Harry Oborne.

MacKinnie Oil & Drilling Co.'s No. 2 Union Pacific-Horne Bros., NW NW SW Sec. 22-22n-78w. Loc. M.I.M. (first report).

Ohio Oil Co.'s No. 12 State, CWL NE Sec. 34-20n-78w Loc.

Tri-State O. & R. Co.'s No. 17, NW SE NW Sec. 20-21n-80w. S.D. 585 ft.

Converse County

Shawnee Expl. Co.'s No. 1 Salisbury, SE SW NE Sec. 27-32n-6w. Rdy. to spd.

Crook County

Union Oil Co. of Calif.'s No. 1 Govt., SW NE NW Sec. 3-57n-62w. Loc.

Vickers Pet. Co.-Continental Oil Co.'s No. 1 Duncan-Lobban, NE NW SW Sec. 28-57n-64w. Loc.; prep. to M.I.

Fremont County

Sinclair-Wyoming Oil Co.'s No. 12 Unit, SW SE NW Sec. 23-32n-95w. Bldg. rd.

Pilot Oil Co.'s No. 5 Enos, CSL SE NE Sec. 21-3n-1w. Drlg. Cody sh. 465 ft.

Tropic Oil Co.'s No. 1 Govt., C SE SW Sec. 34-27n-90w. T.D. 3,495 ft.; cmtd. off tools after sdtrkg.

F. F. Hintze's No. 1 Govt., CWL NW NW Sec. 7-28n-92w. T.D. 1,135 ft.; ga. 3,000,000 cu. ft. gas at 1,030-1,112 ft. open 10 min.; after 20 min. dropped to 500,000 cu. ft.

Hot Springs County

Oscar B. Grace's No. 5 Govt., Lot 3, SE NW Sec. 21-43n-92w. T.D. 472 ft.; P.&A.; Frontier at 453-68 ft.

Boybell Oil Co.'s No. 2 Kyne, NW SE SW Sec. 22-43n-92w. T.D. 469 ft.; will U.R. 6⅝-in. to set at 480 ft.; sulf. wtr. at 435-46 ft.; S.O. 421-34 ft. in sd. (formerly Campbell, et al.)

Lincoln County

H. C. Harris et al's No. 1 Govt., SE NW NW Sec. 23-21n-117w. Drlg. 2,741 ft.

Fontenelle Dev. Co.'s No. 1 Pomroy, NE SW Sec. 5-24n-113w. T.D. 760 ft.; U.R. 10-in. to set on bttm. and tst. S.O.

Natrona County

General Pet. Corp.'s No. 1-21-G, NW NW NW Sec. 21-35n-77w. T.D. 8,050 ft.; P.B. and perf. 7-in. opposite Shannorr sd. at 4,530-70 ft.; prep. to tst.

Connelly Drlg. Co.'s No. 1 State, SW SW NW Sec. 36-36n-81w. T.D. 1,420 ft.; C.O. to res.

Royal Oil Corp.'s No. 1 SW SW SW Sec. 26-35n-80w. Drlg. 153 ft.; cmtd. 12½-in. at 103 ft.

Niobrara County

Lance Creek had three completions, of which one was an outside well that extends the Sundance pool on the east side. Ohio Oil Co.'s No. 8 State Land, NW NW NW Section 36-36n-65w, was completed at 4,340 ft. and flowed 60 bbl. an hour, or at the rate of 1,440 bbl. a day, from the basal Sundance sand at 4,330-40 ft. It is a northeast offset to Continental's No. 3 Rodeo-4, which made 168 bbl. initially through tubing and is 80 ft. higher than Ohio's State well. This leaves the Sundance sand area on the northeast side still undefined.

Ohio Oil Co.'s No. 14 Carrie Putnam, NW SW SW Section 33-36n-65w, an inside well, was completed at 5,407 ft. in the Joss sand at 5,309-5,407 ft. and made 575 bbl. first 24 hours. The 7-in. pipe was cemented at 5,307 ft.

Continental Oil Co.'s No. 18 Tom Bell, SE NE NE Sec.

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The light weight Axial Flow fan was developed as the result of research. Foster Wheeler constructed its own wind tunnel for fan study and testing. Fan housings and large fan hubs eliminate backflow of saturated air; fan assemblies are keyed to the shafts of standard gear motors for economy in both first and operating costs.

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tion 33-36n-65w, an inside well, made 600 bbl. in 24 hours at 5,331 ft., total depth, from the Leo sand topped at 5,275 ft.

Ohio Oil Co.'s No. 8 Converse Sheep, a deep test on top of the structure, is a near completion and is being watched with considerable interest. Before drilling on down to the Bell sand, it stopped at 5,402 ft. to make a Halliburton test of the second Joss sand at 5,205-32 and 5,353-75 ft.

Minnelusa Oil Corp.-MacKinnie O. & D. Co.'s No. 10 Thompson, NW NW NW Sec. 7-35n-65w. Drlg. 4,455 ft.
Ohio Oil Co.'s No. 14 E. Lamb-Acct. 2, C SW SE Sec. 5-35n-65w. R.U.R.
Continental Oil Co.'s No. 3 E. Rohlff, SE SW NW Sec. 32-36n-65w. Drlg. 2,087 ft.
MacKinnie O. & D. Co.-Minnelusa Oil Corp.'s No. 9 Thompson, NW SE NW Sec. 7-35n-65w. Drlg. 4,795 ft.
Continental Oil Co.'s No. 7-B Dielman, SE SE NE Sec. 7-35n-65w. Drlg. 2,663 ft.
Ohio Oil Co.'s No. 16 Putnam, SW SW NW Sec. 4-35n-65w. T.D. 708 ft.; cmtd. 10¾-in. at 316 ft.; W.O.C.
Continental Oil Co.'s No. 6-B Dielman, NE SW NW Sec. 8-35n-65w. T.D. 5,490 ft.; cmtd. 7-in. at 5,448 ft.; tstg.
Ohio Oil Co.'s No. 15 Carrie Putnam, NW NE SW Sec. 33-36n-65w. Drlg. 5,010 ft.
H. D. Moore's No. 1 Berggren, SE NW Sec. 23-35n-63w. T.D. 2,526 ft.; rng. 4¾-in. for W.S.O.
Ohio Oil Co.'s No. 8 Converse Sheep, NW SE SW Sec. 32-36n-65w. T.D. 5,402 ft.; tstg. before D.D.

Park County

The contract for three wells to be drilled in the Oregon basin field by the Yale Petroleum Co. was let to Manning & Martin, Inc., of Denver. All three will be put down with rotary and are getting under way. No. 3 Frisby has been changed to No. 1-B Frisby.

Yale Pet. Corp.'s No. 2 Owens, NE SW SW Sec. 29-52n-100w. C.&P.
Yale Pet. Corp.'s No. 2 Frisby, NW SE NW Sec. 32-52n-100w. Drlg. 600 ft.
Yale Pet. Corp.'s No. 1-B Frisby, SW NE NE Sec. 31-32n-100w. C.&P.
Minnelusa Oil Corp.'s No. 1 Roney, SW SW NW Sec. 24-58n-98w. Drlg. 613 ft.

Sweetwater County

Sinclair-Wyoming Oil Co.'s No. 92-A, NE NW SW Section 11-26n-90w, Lost Soldier field, was completed at 2,157 ft. in the Sundance and pumped 250 bbl. first 24 hours. The 7-in. was cemented at 2,091 ft.

Sinclair-Wyoming Oil Co.'s No. 93-A, SW NW NW Sec. 11-26n-90w. R.U.R. (first report).

Sublette County

Marvel Oil Co.'s No. 1-G, NE NE SE Section 28-27n-113w, on the north side of La Barge field, which was completed last January at 1,040 ft. for 8 bbl. per day, was drilled deeper to 1,080 ft. and picked up a second sand at 1,500-80 ft., which made 35 bbl. per day on the pump. It is a completion.

Yellowstone Oil Co.'s No. 1 Henry Budd, SW SE SE Sec. 6-30n-112w. T.D. 1,070 (cor.) ft.; U.R. 10-in. to 986 ft. for W.S.O.
Texas Co.'s No. 1-E, NW Sec. 27-27n-113w. R.U.C.T. (first report).
Marvel Oil Co.'s No. 1-H Govt., CEL NE SE Sec. 28-27n-113w. Rdy. to spd.
North La Barge Oil Co.'s No. 3 Govt., SE SE NE Sec. 28-27n-113w. R.U.C.T.
Red Desert Corp.'s No. 1 Aspden, NW SW NW Sec. 34-18n-103w. Loc. Will start M.I.M. May 1.
Vermilion Oil Co.'s No. 2 Govt., SW SW SW Sec. 7-12n-99w. T.D. 2,537 ft.; suspended.

Uinta County

Elynor Oil Co.'s No. 1 CEL SE SE Sec. 6-18n-116w. Spdg. 10 ft. Cumberland district, (first report).

Washakie County

Paul Boether's No. 1 Govt., SW SW NW Sec. 4-47n-90w. T.D. 2,160 ft. R.U. machine to D.D.

Weston County

Geo. Keisling's No. 2 Lundberg, CWL NE SE Sec. 35-46n-64w. Rdy. to spd.
Riggs Oil Co.'s No. 4 CNL NE SE Sec. 16-46n-64w. Loc.; will go to Sundance with C.T.
Patterson Oil Co.'s No. 21 fee, NW SW SE Sec. 17-46n-63w. Drlg. below 670 ft.
Wheedon Oil Co.'s No. 5 State, NW SW SE Sec. 16-46n-63w. Drlg. 240 ft.
Gose Oil Synd.'s No. 1, NE NE NE Sec. 28-47n-63w. Drlg. 4,963 ft.
Bruce C. Teeter's No. 1 State, C SW NE Sec. 36-32n-61w. T.D. 2,270 ft.; P.B. and tstg. upper horizon.

MONTANA

Big Horn County

Big Horn Oil & Gas Dev. Co.'s No. 43, NE NW SW Sec. 15-1s-33e. R.U. (first report). Hardin district.

Glacier County

Cut Bank had three completions and five new operations. The Glacier Production Co.'s No. 4 Van Ormer, C SW SE Section 8-33n-5w, was completed at 2,900 ft. and is swabbing. No figures have as yet been released, but it looks like an average well.

Texas Co.'s No. 1 Unit 11, C NE SW Section 11-35n-6w, swabbed 102 bbl. first 8 hours from the Cut Bank sand at 3,001 ft., total depth.

Annand-Hutchings' No. 4 Federal Land Bank, CNL N½ SW Section 11-34n-6w, was completed at 2,907 ft., total depth, and swabbed 75 bbl. first 8 hours from the Cut Bank sand at 2,869-2,904 ft. The main pay was at 2,892-2,904 ft.

Texas Co.'s No. 5 State, C NE NE Sec. 16-32n-5w. Loc.
Texas Co.'s No. 5 Curran, C NW SE Sec. 8-32n-5w. Loc.
A. Kately's No. 1 Kramer, NE SE NE Sec. 15-34n-6w. B.R.
Castle-Pardee's No. 2 Tarrant-Corriguex, SE NE NE Sec. 2-33n-6w. R.O.G.
Santa Rita Oil & Gas Co.'s No. 5 Lander, SE NW NE Sec. 16-35n-6w. Drlg. 140 ft.
Consolidated Gas Co.'s No. 2 Frary-Tribal-172, NW NW NW Sec. 18-32n-5w. Drlg. 1,200 ft.
Santa Rita O. & G. Co.'s No. 4-A Govt., C SE NE Sec. 8-32n-5w. Drlg. 800 ft.; cmtd. 10-in. at 610 ft.
Glacier Prod. Co.'s No. 5 Miller, C SW NE Sec. 32-33n-5w. Drlg. 2,445 ft.
Glacier Prod. Co.'s No. 4 Bonnett, C SW SE Sec. 4-32n-5w. Drlg. 2,825 ft.
Texas Co.'s No. 4 Tweedy, C SE NW Sec. 21-35n-6w. Drlg. 2,112 ft.
A. B. Cobb's No. 5 Van Demark, CSL SE NE Sec. 35-35n-6w. Loc.
Helmac, Tr.'s No. 3 Govt., Lot 3, Sec. 32-33n-5w. R.U.
Cobb-Reagan's No. 4 Jackson, SW SW SE Sec. 5-32n-6w. R.U.R.

Petroleum County

H. Clark Rowland's No. 1 Brundige-Mink, NE SE NW Sec. 35-14n-25e. T.D. 722 ft.; 8⅝-in. on bttm.; prep. to res.
Watson Oil Co.'s No. 1 Austed, SW NW SE Sec. 22-13n-28e. T.D. 1,540 ft.; C.O. at 1,450 ft.

Pondera County

Ted Hawley's No. 3 State, NW SE SE Sec. 16-27n-4w. Drlg. 810 ft. (O.W.D.D. from 560 ft.)

Toole County

Kevin-Sunburst had three completions and one new operation.

C. L. Smith, Agent's No. 1 Government, SW SE NW Section 13-35n-2w, was completed at 1,578 ft. in a break in the lime and is pumping 36 bbl. per day after acidizing with 500 gal. The contact at 1,565 ft. was dry.

Superior Petroleum Co.'s No. 3 Haugen, C NE NE Section 11-35n-3w, proved to be one of the best wells in the field this year. It was completed at 1,860 ft., total depth, and began flowing from a break in the lime at 1,854-60 ft. It made 410 bbl. first 24 hours with no water and then was pinched in to 125 bbl. It had the contact at 1,840 ft.

The G. & A. Oil Co.'s No. 2 Alrick, C NW NE Section 28-35n-3w, was drilled to 1,679 ft. and plugged back to the contact at 1,657-73 ft. and completed for 7 bbl. per day after acidizing with 500 gal.

Le Roi Engines deliver dependable pumping power equal to the heaviest demands because of their sound design—rugged construction—conservative operating speeds.

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CORPUS CHRISTI, TEXAS

Test in Beaver County Missed Newburg and Clinton Sands

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Apr. 22.—The important test of John T. Galey and others on the James Tennis farm in South Beaver Township, Beaver County, Pennsylvania, is drilling at 6,665 ft. in the White Medina sand. No Clinton sand was identified in the section below the Lockport dolomite. The Red Medina was topped at 6,575 ft. and it was believed there was a small gas increase from it which was too small to gage. As this test now stands, both the Newburg and the Clinton sands appeared missing. If the White Medina fails to be a producing horizon, drilling will be halted and the well plugged back to the Oriskany or Marcellus shales and shot for test.

During the past week 20 operations were completed in the lower eastern fields of which 3 were dry holes, 9 gas wells, and 7 oil producers with a daily initial of 94 bbl. One input well was completed in the waterflooding project in Ohio.

SOUTHEAST OHIO

In Jefferson County, Ohio, C. S. Kelly and others completed No. 2 Ella Barnhouse heirs, SW Section 29, Saline Township, at 1,300 ft., Berea sand, and it produced 2 bbl. the first day after shot.

In Medina County Thornton Producing Corp. completed two output wells, Nos. 4-F and 14-F on the Sanford & Watson lease, Tract 10, Lot 3, Chatham Township, in the Berea grit, at 400 and 391 ft., respectively. The No. 4-F was dry and the No. 14-F good for 1 bbl. a day. This company also completed No. 024 as an input well on the same farm.

In Perry County C. Z. Ruth completed No. 15 L. Powell, NE Section 28, Monroe Township, in the Berea sand at 1,174 ft. It is good for 5 bbl. a day after shot.

In Washington County H. J. Burkett and others completed No. 4 Burkett on Neff Ridge, Section 4, Liberty Township, in the Berea grit, at 2,050 ft. It is good for 1 bbl. a day along with 26,000 cu. ft. of gas.

In Cuyahoga County Benedum & Trees, Inc., drilled a test on the Greenwood lease, Mayfield Heights Village, through the Clinton sand, and it was dry and abandoned. There was only a small showing of gas in the Newburg, the producing horizon of this pool.

SOUTHWEST PENNSYLVANIA

In Armstrong County two gas wells were completed. In Plum Creek Township, Shelocta Gas Co. completed the test on the Virginia Schaeffer farm in the Murraysville sand at 1,556 ft. and it is good for 143,000 cu. ft. a day. In Kiskiminitas Township Chestnut Ridge Gas Co. completed the test on the E. J. Shirey farm at 1,636 ft. and it is good for 253,000 cu. ft. a day from the Murraysville sand.

In Indiana County T. W. Phillips Gas & Oil Co. completed No. 2 N. M. Spence, in Washington Township, in Bradford sand at 3,669 ft., and it gaged 32,000 cu. ft. of gas a day. In this township, same company is building rig on the Louisa Black farm and for No. 1 E. B. Brandon. In White Township, Phillips is drilling at 2,641 ft. in No. 1 J. J. McClain, and at 2,678 ft. in No. 1 H. W. Leech, and in Young Township was drilling at 255 ft. on the R. & P. Coal Co. lease. In Center Township, this company is drilling at 625 ft. on B. R. & P. Coal Co. land, and in Brush Valley Township at 335 ft. in No. 1 George Smolar.

In South Franklin Township, Fayette County, Union Gasoline & Oil Corp. completed No. 829 C. T. Conn at 1,017 ft., with the Dunkard sand topped at 942 ft., and 5 bbl. a day at 1,004 ft. In this township, Burleigh Wright and others are drilling at 2,963 ft. in the Holmes Andrews test with the fifth sand topped at 2,953 ft., and oil showing at 2,954 ft.

On Chestnut Ridge in North Union Township, Fayette County, Pennsylvania, New Penn Development Co., William E. Snee and others, are drilling at 6,920 ft. on the Piedmont Coal Co. lease, and no Oriskany sand has been found. The formation is still Onondaga chert, or a section, so far, 228 ft. thick. In Maryland, these operators have reached 5,692 ft. on the Humberson farm on the Accident dome in Garrett County. This test is making better progress now. On Laurel Ridge in Stewart Township, Fayette County, these operators and E. G. Mueller have reached 7,078 ft. on the Gregg L. Neel farm, having been delayed with a cave.

WEST VIRGINIA

In Ritchie County Schultz Oil Co. completed No. 8 T. C. Hammett in the Grant district at 2,050 ft., Squaw sand, and it is good for 10 bbl. a day.

In Calhoun County, West Virginia, Creed Yoak completed No. 2 Edith Z. McDonald in Sherman district at 2,221 ft. It found gas at 2,188-94 ft., and 20 bbl. of oil a day at 2,194-2,221 ft., Big Injun sand.

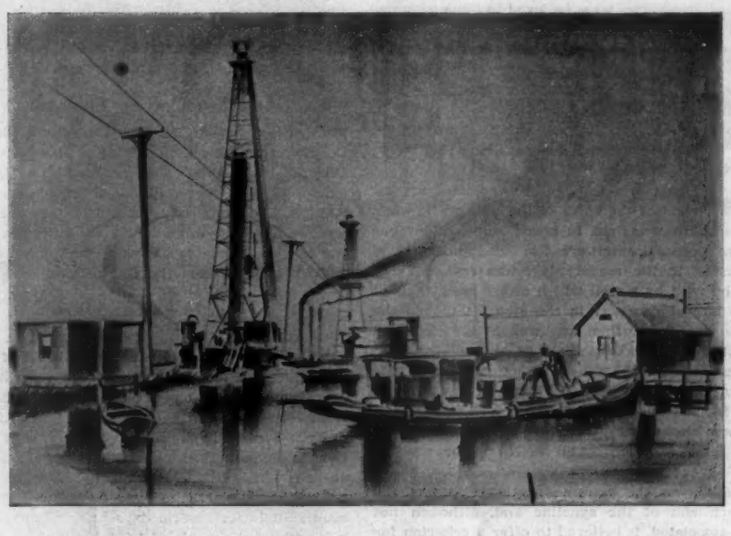
Gas Wells

In Fayette County Northeastern Gas Co.'s No. 4 Deitz Colliery Co., in Falls district, in Injun sand at 1,690 ft., has a volume of 103,000 cu. ft. of gas a day.

In Ritchie County Pittsburgh Oil & Gas Co. completed No. 3 Coyle heirs in Murphy district, in Squaw sand, at 1,894 ft., and it is a gas well with a volume of 1,000,000 cu. ft. a day. In Grant district, Swadley & Shrader completed Simmons & Mayfield test in Injun sand at 2,244 ft., and it is a gas well gaging 200,000 cu. ft. a day.

Oriskany Gas Field

No wells were completed in the Oriskany gas field in Kanawha County. In Poca district, Columbian Carbon Co. is building a rig to a new location on the D. W. Taylor and others farm, elevation 873.3 ft., and is drilling at 2,350 ft. in No. 1 V. E. King and others, and at 1,699 ft. in No. 1 Joseph Hughart.



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North and East Texas

By
D. H. STORMONT

Lease Play Covers a Stretch Of 70 Miles North and South

WICHITA FALLS, Tex., Apr. 22.—Holding the attention during the past week and scheduled to feature the weekly activity from the North Texas district for several months is the much-talked-of Fort Worth syncline. Until about a month ago when oil men first associated the past several months' new discoveries in Clay and Montague counties with this great regional structural condition, field activity was extremely spotted and new discoveries were believed to be determined by local conditions only.

With the advent of the syncline the play has filled in the gaps between discoveries in Clay and Montague counties and in less than a month's time has spread three counties southward. New fields discovered in these two extreme North Texas counties during the past year are now attributed to conditions relative to the Fort Worth syncline.

One of the most outstanding discoveries of several months was made at the close of the past week when the Rogers & Rogers field, in north central Montague County, and one of the first areas to develop deep Bend oil production in the recent play, was extended 1½ miles to the west by a well which offers indications of being the largest producer in the area. It topped the Bend lime pay higher than any well in the field and was reported to be making about 80 bbl. of oil hourly with an estimated 5,000,000 cu. ft. of gas daily. The field extensioner is Walter M. Payne's No. 1 T. M. Baker, in Block 42, J. Y. Castello Survey. The flow from the well was through 2½-in. tubing from perforations in casing from 5,325 to 5,329 ft. No water was reported.

This field is on the extreme northern part of the northeastern rim of the syncline and, although not definitely associated, is believed to offer a criterion for the structural conditions and extent of fields, if found, throughout the basin itself. Production in this, the Omohundro field, and the Sinclair Prairie field at Bonita, is all believed to be from approximately the same horizon in the Bend series of lower Pennsylvanian.

High Prices

Several weeks ago wildcat acreage was available in parts of Montague and Clay counties for from $50 to $100 per acre and practically all of Wise, Tarrant, and Johnson counties was available for prices ranging from 25 cents to $1 per acre. In less than a month wildcat acreage prices have soared to as high as $200 per acre in Montague County, several strictly wildcat blocks having been taken the past week at that price in the county, and as high as $2 and $3 for wildcat acreage in Tarrant and southern Wise counties. The latter two counties are from 25 to 50 miles from any production determined by the structural conditions of the Fort Worth basin or syncline.

It has been estimated that more than $750,000 has changed hands during Wise County's leasing play of the past few weeks. Approximately three-fourths of the county's 552,320 acres have been leased by major companies and independents, establishing what oil men believe to have been rivaled only by the Forest City basin leasing play in the upper Mid-Continent area.

Closely following the acquisition of a 7,000-acre block southwest of the city of Fort Worth in Tarrant County 2 weeks ago by Nevile G. Penrose, another 7,000-acre block was acquired the past week. The block is about 50 miles south and slightly east of any production in the Fort Worth basin. It was turned on a straight 10-year commercial lease basis for a reported consideration of $7,000. In the meantime negotiations were under way for several more of the larger Tarrant County ranches and farms. Some reports credit a deep test preparing to start on a large block in northern Tarrant County and near the Denton County line.

Even as far as 70 miles south of the key production determined by the Fort Worth basin, leases are being taken for prices ranging from 10 cents per acre for 6 months' shooting option to 50 cents per acre straight commercial leases with 50-cent yearly rentals per acre. The area is Johnson County, south of Tarrant County, three counties south of the production. Plymouth Oil Co. was reported taking a 5,500-acre block west of Cleburne in Johnson County for 10 cents per acre for 6 months' shooting rights, while W. G. Burrage, of Abilene, is reported to have assembled between 10,000 and 20,000 acres in the northern part of the county at prices ranging from 25 to 50 cents per acre.

Clay County Extension

A west extension for the Ross-Caddo lime pool in northwestern Clay County was seen when Continental Oil Co.'s No. 1 Avis, SE cor. of Block 20, Rains County School Lands Survey, found saturation from 5,365 to 5,374 ft. and prepared to complete. The well is 800 ft. west of the company's No. 1 Ross, which brought in the new field late in December with a flow of about 1,000 bbl. daily from the Caddo lime.

K.M.A. Ordovician

Indicating a major strike for the area, the recent Ellenburger production found in the heart of the Strawn producing K.M.A. field of Wichita and northern Archer counties, has several new tests planned. The discovery well, Fain-McGaha Oil Corp.'s No. 1-B Griffin, W. H. Spillers Survey, in the southwest portion of the K.M.A. field, received a final gage of 339 bbl. of oil in 3 hours or at the rate of 2,712 bbl. daily. A large portion of the well's flow was believed to be "head," as it had been shut in for several days prior to gage. However, it is estimated capable of 1,000 bbl. daily.

In the extreme northeast corner of the field Hanlon-Buchanan, Inc.'s No. 10-E Fassett-Tuttle, Section 3, S.A.&M.G. Survey, was rigging up to drill deeper to the Ordovician horizon in search of saturation in the Ellenburger lime. Offsetting the discovery well the Falls Refining Co. was preparing to move off pumping equipment from its No. 1 J. B. Tidwell and move on rig for deepening to the new horizon. Across the line in Archer County the Magnolia Petroleum Co. was moving off pumping equipment from its No. 2 Fred Thom, about ½ mile southeast of the discovery well, and was preparing to move in machinery for deepening. The pay in the discovery well was from 4,352 to 4,389 ft. in the Ellenburger lime of Lower Ordovician age.

NORTH TEXAS COMPLETIONS

Archer County

Cato Oil Co.'s No. 10 O. T. Anderson, 1,085 ft., dry. Deep Oil and R. G. Drilling Co.'s No. 2 Dr. J. A. Little, 4,329-65 ft., 1,300 bbl. Panhandle Refining Co.'s No. 6 F. C. Green C, 1,134-44 ft., 85 bbl. Roeser & Pendleton, Inc.'s No. 1 J. R. Parkey, 4,921 ft., dry. L. Sikes' No. 1-S O. T. Anderson, abandoned location.

Clay County

W. H. McKinzie's No. 1 R. L. Ligon, 835 ft., dry. S. S. Staley and others' No. 1 C. Dunn, 1,404 ft., dry.

Cooke County

Cox & Hamon's No. 9 K. Neu A, 4,992-5,016 ft., 600 bbl. Kingery Brothers' No. 8 A. Johnson, 1,209-32 ft., 191 bbl.

Jack County

Harper & Knappenberger's No. 3 C. B. Jones, 3,151-80 ft., 558 bbl.

Montague County

Gibson Jennings and others' No. 1 J. G. Howard, 1,784 ft., dry. Gibson Jennings and others' No. 1 D. T. Hold, abandoned location. Sinclair Prairie and others' No. 29 Holt, 3,348 ft., dry. Stanolind Oil & Gas Co.'s No. 2 W. L. Zachary, 5,229-54 ft., 1,400 bbl. Sunray Oil Co.'s No. 2 J. B. Burnett, 5,404-12 ft., 335 bbl.

Wichita County

Dorian and others' No. 12 Sue Mitchell, 1,344 ft., dry. Fisher and others' No. 12 F. P. Warren, 1,351-1,642 ft., 313 bbl. Hammon and others' No. 4 W. H. Hammon, 3,938-4,000 ft., 1,220 bbl. Owens Oil Co.'s No. 6 H. B. Hines, 513-20 ft., 5 bbl. Owens Oil Co.'s No. 7 H. B. Hines, 530 ft., dry. George Proctor's No. 51 Ed Foster, 1,521-49 ft., 25 bbl. George Proctor's No. 52 Ed Foster, 1,528-48 ft., 20 bbl.

Wilbarger County

Consolidated Oil Co.'s No. 2 G. B. Ancel C, 3,725-76 ft., 880 bbl. L. Webb's No. 4 W. T. Waggoner D, 2,354-70 ft., 40 bbl.

Young County

F. T. Conner's No. 1 W. McClatchey, 4,208 ft., dry. Rannell Oil Co.'s Nos. 4, 5, and 6 J. W. Jack C, abandoned locations. E. W. Robitaille's No. 4 J. C. Vaughan A, 3,862-3,937 ft., 599 bbl.

EASTERN TEXAS

DALLAS, Tex., Apr. 22.—New locations in the deep Pettit lime oil-producing area recently opened at Chapel Hill in eastern Smith County, together with indications of new activity for the Grapeland gas and distillate field in northern Houston County, held the attention in eastern Texas during the week.

Sun Oil Co. staked location for another deep test in the Chapel Hill district for No. 1 E. H. Sanders, on a 145-acre lease in the John A. Manier Survey 87, and located 825 ft. from the north and south lines and midway between the east and west lines of the lease. The location falls about ¾ mile south of Sun's No. 1 Huddle, in the Dickerson Survey, which is being completed as a gas and distillate producer from the Rodessa section of the Glen Rose formation. No. 1 Huddle is about 2 miles south of Hunt Oil Co.'s discovery gas well on the large structure and about 4 miles south of Shell Oil Co., Inc.'s discovery oil well from the Pettit lime.

Another location for the field, but not definitely known to be scheduled for immediate drilling, is by J. B. McClung for No. 1 fee, on a gin lot in the P. Lively Survey. The Railroad Commission granted the drilling permit last week for the test on a tract consisting of only one acre. The location was believed to have been sought on a protective basis.

Grapeland Field

An outpost test about a mile west of production in the Grapeland gas and distillate field of northern Houston County has been staked by Grapeland Oil Co. as its No. 1 Lewis Herod, 113-acre tract near the center of the J. D. Procella Survey, Abstract 69.

George T. Abell, Midland, is credited with having assembled a unitized block of 1,608 acres in and near the field and, pending the acquisition of considerable more acreage, plans to start a 6,200-ft. test. Under the agreement of the unitization program a recycling plant will be started to strip the gas of its distillate content should a gas well be found in the drilling. Several such unitization plans are being circulated among acreage holders in the field by several companies and operators.

Rusk County Deepening Job

It is reported that the old Nivia Oil Co.'s No. 1 Citizens National Bank, a wildcat 2½ miles southeast of

Henderson in Rusk County, will be carried deeper below 6,802 ft., where it has stood abandoned for several years. J. S. Harrell and others have taken over the test and will move in rig immediately for deepening to the Travis Peak expected within about 1,000 ft. of its present total depth. Drilling was stopped only 400 ft. into the lower Glen Rose section. Location of the test is in the Del Carmel Survey.

Houston Wildcat

Ten miles south of the town of Crockett and 5 miles northwest of Loveland in Houston County, G. L. Dixon has staked location for No. 1 B. R. Crowson. The location is in the John Cheairs Survey and contract for the 5,000-ft. test has been let to J. C. Cook, Tyler. The drill site falls about 6 miles east of the shallow Kittrell pool.

EAST TEXAS FIELD COMPLETIONS

(1-hour gage)

Gregg County—Longview Area

Coastal Development Co.'s No. 25 J. J. Flewellen, 3,659-70 ft., 42 bbl.

Rusk County—Joiner Area

James E. Adams' No. 2 I.O.O.F., 3,754-65 ft., 40 bbl. (second completion, formerly F. W. Fisher's No. 1 I.O.O.F.)

Upshur County—Longview Area

B. F. Phillips' No. 4-B C. B. Everett, 3,583-84 ft., 30 bbl.

EAST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Anderson County

Long Lake field: J. K. Hughes' No. 1 J. A. Reggan, 5,380-81½ ft., 39 bbl. Texas Co.'s No. 3 W. P. B. Woodhouse, 5,239-80 ft., 20,500,000 cu. ft. of gas.

Houston County

Grapeland field: R. W. Grimes' No. 1 N. Collins, 2 miles west of the field, abandoned location.

West Texas Fields

(Continued from Page 219)

cent takings if the field's allowable during May is cut from its current level of about 35,000 bbl. to about 30,000 or 32,000 bbl. daily. Also, they would connect all currently unconnected wells in the field.

WEST TEXAS FIELD COMPLETIONS

(24-hour gages)

Andrews County

In the Means field Humble Oil & Refining Co.'s No. 78 J. S. Means, 4,450-4,500 ft., 1,325 bbl.

A wildcat, Richmond Drilling Co.'s No. 1 University, top anhydrite 1,508 ft., top Yates sand 2,850 ft., top Yates frosted quartz zone 2,870 ft., top brown lime 3,950 ft., top solid lime 4,050 ft., dry and abandoned at 5,908 ft.

In the Emma field Sinclair Prairie Oil Co.'s No. 11 E. Cowden, 4,144-4,240 ft., 800 bbl.

Concho County

A wildcat, Charter Oil & Gas Co.'s No. 1 T. Y. Hill, abandoned at 2,082 ft.

Crane County

In the Sand Hills field Humble Oil & Refining Co.'s No. 36 Tubb, 4,300-4,420 ft., 2,330 bbl.

Ector County

In the North Cowden field Atlantic Refining Co.'s No. 9 Henderson, 4,060-4,250 ft., 1,537 bbl. Barnsdall Oil Co.'s No. 2-B R. W. Smith, 4,055-4,200 ft., 1,255 bbl. Cities Service Oil Co.'s No. 1-B Wight, 4,080-4,236 ft., 973 bbl. Stanolind Oil & Gas Co.'s No. 2-A Midland Farms, 4,470-4,500 ft., 438 bbl.

In the Goldsmith field Gulf Oil Corp.'s No. 266 Goldsmith, 4,179-4,234 ft., 1,670 bbl. Gulf Oil Corp.'s No. 267 Goldsmith, 4,118-77 ft., 4,950 bbl. Landreth Production Corp.'s No. 11-M Scharbauer, 4,127-84 ft., 530 bbl.

In the Jordan field Gulf Oil Corp.'s No. 1 State "N," 3,527-3,609 ft., 1,860 bbl.

In the Foster field Shell Oil Co., Inc.'s No. 1-C Witcher, 3,950-4,180 ft., 1,016 bbl. Stanolind Oil & Gas Co.'s No. 45-A E. F. Cowden, 3,910-4,120 ft., 706 bbl. Stanolind Oil & Gas Co.'s No. 48-A E. F. Cowden, 4,045-4,200 ft., 515 bbl. Stanolind Oil & Gas Co.'s No. 18 Johnson, 4,080-4,180 ft., 536 bbl. Stanolind Oil & Gas Co.'s No. 41 Witcher, 3,930-4,155 ft., 1,148 bbl. York & Harper's No. 1-D Foster, 4,143-4,328 ft., 521 bbl.

Gaines County

In the Seminole field Magnolia Petroleum Co.'s No. 3-267 H.&J., 5,150-5,312 ft., 724 bbl.

Hockley County

In the Slaughter field Awoeb Oil Co.'s No. 3 Davis, 4,870-4,997 ft., 1,188 bbl. Stanolind Oil & Gas Co.'s No. 8-B Slaughter, 4,910-96 ft., 1,100 bbl.

Pecos County

In the Pecos Valley field Adams, Black & Bennett's No. 6 Iowa Realty Trust, 1,604-74 ft., 235 bbl. H. G. Eastham's No. 2-A University, 1,599-1,652 ft., 91 bbl. L. W. Fritz' No. 2 Redmond-Iowa Realty Trust, 1,602-45 ft., 285 bbl.

In the Lehn field E. B. Kelly's No. 1 Masterson-Lehn, 1,696-1,718 ft., 26 bbl. Anderson & Campbell's No. 2 Masterson-Lehn, 1,692-1,728 ft., 66 bbl.

In the Apco field Skelly Oil Co.'s No. 1 J. S. Masterson, 4,616-4,862 ft., 1,281 bbl.

Scurry County

In the Sharon field B-R-S Oil Co.'s No. 1 B. H. Chapman, 1,652-1,730 ft., 108 bbl. F. W. Merrick, Inc.'s No. 2 First National Bank of Snyder, 2,251-2,516 ft., 148 bbl. Ordovician Oil Co.'s No. 1 R. O. McClure, 2,315-2,402 ft., 175 bbl.

Ward County

In the Estes field Gulf Oil Corp.'s No. 131 Estes, 2,425-2,687 ft., 2,795 bbl.

In the Hutchins field Gulf Oil Corp.'s No. 139 Hutchins, 2,674-2,739 ft., 1,338 bbl.

In the Sealy field Mid-Continent Petroleum Corp.'s No. 6 Sealy, 3,038-43 ft., 364 bbl. Sinclair Prairie Oil Co.'s No. 8 Sealy, 3,048-64 ft., 1,074 bbl.

Yoakum County

In the Wasson field Aloco Oil Co.'s No. 2-C Willard, 4,978-5,221 ft., 764 bbl. Argo Oil Corp.'s No. 1-C Comer,

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4,922-5,180 ft., 1,222 bbl. Basin States Oil Co.'s No. 4 Jordan, 4,970-5,209 ft., 628 bbl. Humble Oil & Refining Co.'s No. 27 Wooten, 4,980-5,100 ft., 730 bbl. Mabee Oil Co.'s No. 1-B Willard, 4,900-5,185 ft., 1,652 bbl. Mabee Oil Co.'s No. 5-C Willard, 4,880-5,175 ft., 1,247 bbl. Magnolia Petroleum Co.'s No. 14 Kendrick, 5,010-5,105 ft., 152 bbl. Shell Oil Co., Inc.'s No. 3-E Baumgart, 4,890-5,200 ft., 1,087 bbl. Texas Pacific Coal & Oil Co.'s No. 29 Bennett, 5,024-5,250 ft., 177 bbl.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Apr. 22.—Jones County centered attention in the West Central Texas district during the past week with three new wildcat locations and prospects appearing for a pool discovery in the 2,500-ft. lime.

Grisso Royalty Corp. and C. W. Byron made a location for a 3,400-ft. wildcat to be drilled to the Palo Pinto lime about a mile southwest of the Griffin field in Jones County. The well will be No. 1 L. B. Gray, SE NW Section 25, Deaf and Dumb Asylum Lands Survey.

South of Hawley and on the south side of the Clear Fort River Fain-McGaha Oil Corp. made location for No. 1 K. J. Rister on a 78-acre tract in the J. McGrew Survey 245, about midway between the Hawley and Sayles fields.

An attempt to tap production 5 miles south and slightly west of the Griffin field will be made by Erin Petroleum Co. at a new test spudded ½ mile southeast of a well drilled recently which showed for production in the Palo Pinto lime until salt water broke through. The new location is for No. 1 E. A. Hicks, SW Section 5, Deaf and Dumb Asylum Lands Survey.

Prospective Field Opener

Six miles south of Stamford and indicating a discovery is John E. Farrel's No. 1 F. D. Reid, NW Section 31, Deaf and Dumb Asylum Lands Survey. Carrying 2,200 ft. of water in the hole, a saturated lime was found at 2,571 ft. and penetrated 4 ft. Bailer recovered live oil from the bottom of the hole and operators were last reported reaming casing to the top of the show for a test of the section. The wildcat is contracted to the Palo Pinto lime and will be carried deeper in the event the showing does not prove commercial production.

New Wildcat Locations

Haskell County has been given a new test by S. B. Roberts' No. 1 K. B. Nowles, SE cor. S½ N½ Section 1, S.F.I.W. Survey, ½ mile north of a small Palo Pinto lime discovery well completed several months ago. It is 4 miles northeast of Stamford. The well is scheduled for immediate spudding.

Shackelford County's new wildcat is contracted to 1,650 ft. and is L. R. Terry's No. 1 W. A. Green, 467 ft. from the north and west lines of S½ NE Section 64, Block 12, T.&P. Survey.

In Stephens County, 5½ miles south of the Stribling field, a previously announced intention to drill was verified when C. W. Carey received permit for No. 1 J. M. Crudgington, a 4,100-ft. test, C SE SE SE Section 1268, T.E.&L. Survey. The test is being rigged up for immediate spudding.

WEST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Comanche County

A wildcat, March's No. 1 Scott, Section 25, Block 2, H.&T.C. Survey, dry and abandoned at 1,200 ft.

Hood County

A wildcat, Seaberry's No. 1 Davis, M. Setzer Survey, dry and abandoned at total depth of 530 ft.

Jones County

In the Lewis field W. H. Peckham's No. 14 Brock, 1,859-79 ft., 288 bbl. Fain-McGaha Oil Corp.'s No. 10 Lewis, 1,910-20 ft., 400 bbl.

In the Guitar field Guitar Trust's No. 3 fee, dry and abandoned at original total depth of 2,007 ft.

In the Sayles field Lewis Production Co.'s No. 21 Sayles, 1,905-23 ft., 260 bbl.

In the Noodle Creek field Ungren & Frazier's No. 1 Herring, 2,380-93 ft., 210 bbl. daily, pumping.

TEXAS PANHANDLE

AMARILLO, Tex., Apr. 22.—Featuring the week's activity in the Texas Panhandle district was the staking of a new wildcat test in Childress County and the completion of the largest gas well in the history of the large Panhandle gas field.

The wildcat was staked by Texas Co. and will be No. 1 P. B. Smith Land & Cattle Co., 362 ft. from the north and 368 ft. from the west lines of Section 97, Block 9, H.&G.N. Survey. It is on a block of 49,080 acres in Childress and Collingsworth counties. This is said to be the first wildcat in the district located solely on a seismograph-reflection picture. In many places in the district lack of reflection has been evident and the results of this test will be closely noted.

The largest gas well ever put on the Railroad Commission records in the Panhandle field was completed last week in Moore County. It is Shamrock Oil & Gas Co.'s No. 1 Gearhart. On the back-pressure-method test it was given a volume of 260,000,000 cu. ft. daily. There have been other gas wells in the county which would undoubtedly have produced as much or more had they been tested by the back-pressure method. The well is located in Section 351, Block 44, H.&T.C. Survey and is bottomed at 3,065 ft. with gas pay being logged from 2,955 ft. to total depth.

TEXAS PANHANDLE COMPLETIONS

Carson County

Magnolia Petroleum Co.'s No. 75 fee "244," 3,140-48 ft., 221 bbl. Texas Co.'s No. 23 Boney, 3,150-90 ft., 498 bbl.

Gray County

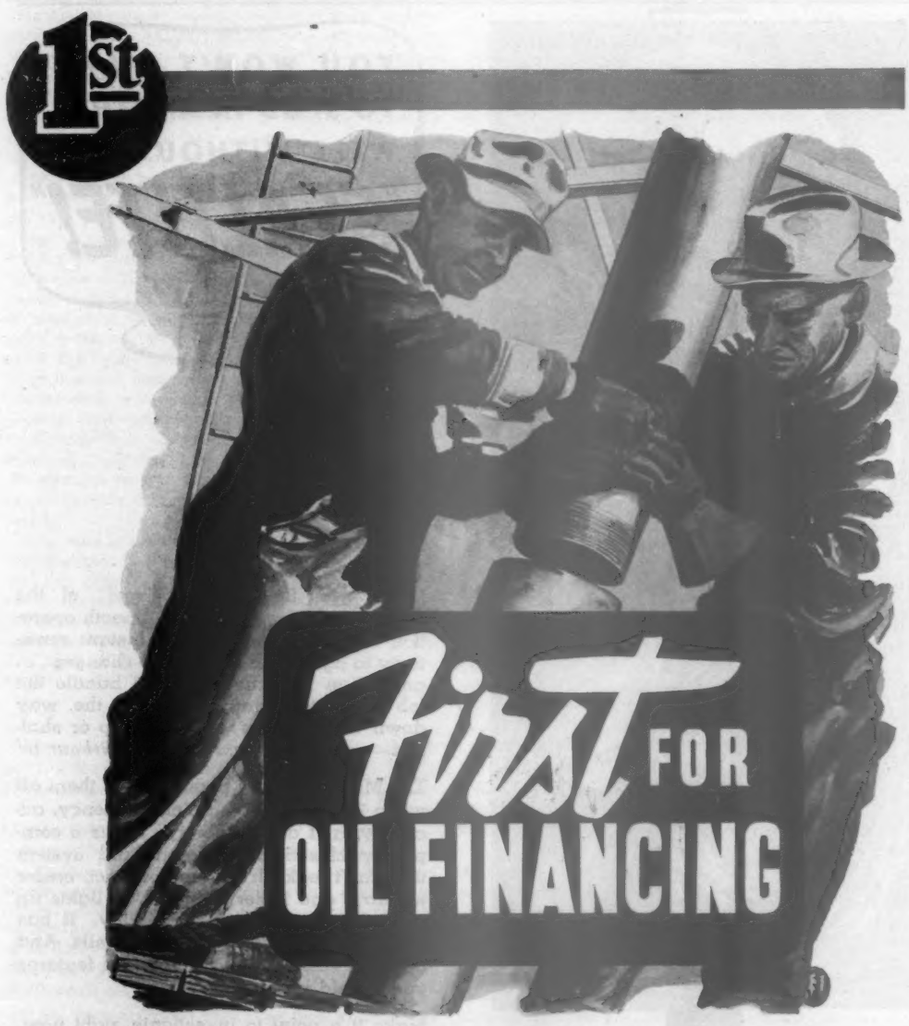
Bradshaw Oil Co.'s No. 5 Pope, 3,147-3,284 ft., 325 bbl. Wilcox Oil & Gas Co.'s No. 40 Combs-Worley, 2,960-3,070 ft., 75 bbl.

Hutchinson County

Bob Murphy's No. 8 Whittenburg, 2,720-95 ft., 467 bbl. Shell Oil Co., Inc.'s No. 1 Harvey B, 2,965-3,035 ft., 425 bbl. Texas Co.'s No. 24 Pond, 3,013-50 ft., 572 bbl. Texas Co.'s No. 21 Lewis, 2,970-3,025 ft., 308 bbl. Whittaker's No. 3 Starnes, 3,110-40 ft., 432 bbl.

Moore County

Shamrock Oil & Gas Corp.'s No. 1 Gearhart, 2,955-3,065 ft., 260,000,000 cu. ft. of gas. Texhoma Natural Gas Co.'s No. 9 Thompson, 2,805-3,290 ft., 13,700,000 cu. ft. of gas.



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WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S. T. R.	Depth	Status
Union Oil, No. 76 Callender, Dominguez, L. A.	32- 3-13	7,565	completing
Shell Oil, No. 102 Reyes, Dominguez, L. A.	33- 3-13	7,950	flow 955 b.d.
Shell Oil, No. 103 Reyes, Dominguez, L. A.	34- 3-13	3,195	sd. sh. drlg.
Havenstrite, R. E., No. 3 Larronde, Dominguez, L. A.	32- 3-13	2,286	sd. sh. drlg.
Seaport Oil, No. 1 Dasteel, Dominguez, L. A.	32- 3-13	4,673	sd. sh. drlg.
Apex Pet., No. 1 Hatfield, Rosecrans, L. A.	20- 3-13	8,700	flow water
Mission Oil, No. 1 Pierce, Rosecrans, L. A.	20- 3-13	2,852	sd. sh. drlg.
So. Cal. Pet., No. 2 Slabaugh, Rosecrans, L. A.	20- 3-13	4,533	sd. sh. drlg.
St. Anthony Oil, No. 3 Gordon, Rosecrans, L. A.	19- 3-13	5,140	sd. sh. drlg.
Union Oil, No. 40 Rosecrans, Rosecrans, L. A.	19- 3-13	7,880	sd. sh. drlg.
Union Oil, No. 41 Rosecrans, Rosecrans, L. A.	19- 3-13	4,961	sd. sh. drlg.
Howard Oil, No. 2 Byrens, Rosecrans, L. A.	20- 3-13	2,994	sd. sh. drlg.
Royalty Service, No. 1 Cement, Rosecrans, L. A.	20- 3-13	9,148	cleaning out
Kelly & Sons, No. 2 McMillen, Rosecrans, L. A.	20- 3-13	7,334	recmtd. 7,274
Chicago Oil, No. 1 Founders, Rosecrans, L. A.	20- 3-13	266	sd. sh. drlg.
Thorley Oil, No. 1 Athens, Rosecrans, L. A.	7- 3-13	2,996	sd. sh. drlg.
El Rey Oil, No. 1 Westmore, Athens, L. A.	2- 3-14	9,063	cmtd. 7-in.
Vanguard Oil, No. 1 L.A.I., Centinella, L. A.	29- 2-14	1,010	sd. sh. drlg.
Turf Oil, No. 1 H.R.A., Potrero, L. A.	34- 2-14	6,179	deepening
Tide Water A. O., No. 13 Porter, Aliso Canyon, L. A.	27- 3-16	3,690	sd. sh. drlg.
Tide Water A. O., No. 22 Porter, Aliso Canyon, L. A.	27- 3-16	1,452	sd. sh. drlg.
Brit. Amer. Oil, No. 1 Perkins, Newhall, L. A.	14- 3-16	4,660	sd. sh. drlg.
Consolidated Pet., No. 4 Needham, Newhall, L. A.	13- 3-16	4,401	bailed dry
Barnsdall Oil, No. 9 R.S.F., Newhall, L. A.	27- 4-17	7,195	completing
Barnsdall Oil, No. 10 R.S.F., Newhall, L. A.	26- 4-17	6,538	sd. sh. drlg.
General Pet., No. 103 P.E., Wilmington, L. A.	35- 4-13	3,110	sd. sh. drlg.
Continental Corp., No. 5 L.A.C.F.C., Wilmington, L.A.	2- 5-13	2,750	redrlg. 2,191
Franco-Amer. Pet., No. 2 Harbor, Wilmington, L. A.	32- 4-13	3,641	completing
Hancock Oil, No. 27-A Harbor, Wilmington, L. A.	35- 4-13	2,371	sd. sh. drlg.
Long Beach Dev., No. 11-W Harbor, Wilm., L. A.	3- 5-13	4,037	completing
Long Beach Dev., No. 12-W Harbor, Wilm., L. A.	10- 5-13	3,160	sd. sh. drlg.
MacMillan Pet., No. 6 Hayes, Wilmington, L. A.	3- 5-13	3,548	flow 200 b.d.
Morton & Elder, No. 1 Harbor, Wilmington, L. A.	35- 4-13	3,483	completing
Union Pacific R. R., No. 131, Wilmington, L. A.	3- 5-13	5,297	recmtd. 4,789
Union Pacific R. R., No. 133, Wilmington, L. A.	3- 5-13	5,014	redrlg. 4,020
Union Pacific R. R., No. 135, Wilmington, L. A.	4- 5-13	5,610	completing
Union Pacific R. R., No. 136, Wilmington, L. A.	3- 5-13	2,994	sd. sh. drlg.
Union Pacific R. R., No. 137, Wilmington, L. A.	4- 5-13	3,575	cleaning out
Union Pacific R. R., No. 139, Wilmington, L. A.	3- 5-13	3,850	sd. sh. drlg.
Union Pacific R. R., No. 23-E, Wilmington, L. A.	3- 5-13	2,660	sd. sh. drlg.
Union Pacific R. R., No. 24-E, Wilmington, L. A.	3- 5-13	2,754	completing
Wilbur, V. R., No. 3 Kreiger, Wilmington, L. A.	32- 4-13	3,697	completing
Wilton Oil, No. 55-6-F, Wilmington, L. A.	32- 4-13	3,491	sd. sh. drlg.
Kern Oil, No. 34 Monterey, Montebello, L. A.	2- 2-12	7,805	flow 590 b.d.
Kern Oil, No. 38 Monterey, Montebello, L. A.	2- 2-12	7,789	new zone
Kern Oil, No. 3 Eggleston, Montebello, L. A.	2- 2-12	5,450	sd. sh. drlg.
Brookline Oil, No. 1 Drake, Montebello, L. A.	2- 2-12	7,630	will deepen
Bush Oil, No. 2 Mihlfred, Montebello, L. A.	3- 2-12	7,683	flow 225 b.d.
C. A. P. Oil, No. 1 Dutch, Montebello, L. A.	11- 2-12	7,657	redrlg. 7,530
Chemical Oil, No. 1 Chemiculture, Montbello, L. A.	12- 2-12	1,194	cmtd. 795
Columbia Oil, No. 1 Scheinik, Montebello, L. A.	3- 2-12	8,154	P.B. 7,970
Getty-Pac. West., No. 1 Star, Montebello, L. A.	10- 2-12	6,695	sd. sh. drlg.
Grace Oil, No. 1 Duhrsen, Montebello, L. A.	3- 2-12	7,618	swabbing
Herley-Kelly, No. 1 Masser, Montebello, L. A.	2- 2-12	6,690	will deepen
Mabee Co., No. 39 Monterey, Montebello, L. A.	2- 2-12	7,790	P.B. 7,740
Mabee Co., No. 43 Monterey, Montebello, L. A.	2- 2-12	7,805	O.S. drlg.
Mono Oil, No. 1 Foreman, Montebello, L. A.	2- 2-12	7,840	new zone
Montebello Oil, No. 2 Wallace, Montebello, L. A.	3- 2-12	4,852	sd. sh. drlg.
Mont. Reservoir Oil, No. 2 Mont., Montebello, L. A.	2- 2-12	7,612	will deepen
Texas Co., No. 4 Wilcox, Montebello, L. A.	3- 2-12	4,963	sd. sh. drlg.
Winlock Oil, No. 1 Win, Montebello, L. A.	11- 2-12	7,590	cleaning out
Allied Pet., No. 34 Signal, Long Beach, L. A.	30- 4-12	10,065	cleaning out
Unity Oil, No. 1 Donna, Long Beach, L. A.	24- 4-13	3,572	sd. sh. drlg.
Kern Pet., No. 1 Signal, Long Beach, L. A.	24- 4-13	3,623	pump 125 b.d.
Sunset Oil, No. 2 Whitney, Long Beach, L. A.	19- 4-12	3,620	sd. sh. drlg.
Dormax Oil, No. 2 Signal, Long Beach, L. A.	30- 4-12	4,211	sd. sh. drlg.
Exeter Oil, No. 3 Olson, Long Beach, L. A.	19- 4-12	4,597	completing
Dunlap, D. D., No. 15 Signal, Long Beach, L. A.	19- 4-12	2,755	cleaning out
Tucker, H. M., No. 1 Heath, Buena Park, Orange	34- 3-11	2,201	sd. sh. drlg.
Sonwell Oil, No. 2 Coyote, East Coyote, Orange	13- 3-10	3,130	sd. sh. drlg.
Standard Oil, No. 69 Emery, West Coyote, Orange	24- 3-11	3,440	sd. sh. drlg.
Southwest Expl., No. 26 State, Hunt. Beach, Orange	10- 6-11	5,391	pump 455 b.d.
Southwest Expl., No. 27 State, Hunt. Beach, Orange	10- 6-11	1,795	sd. sh. drlg.
Clear View Oil, No. 1 Williams, Hunt. Beach, Orange	36- 5-11	4,286	cmtd. 4,226
Owens & Baker, No. 1 Newland, Hunt., Bch., Orange	36- 5-11	1,245	sd. sh. drlg.
South Basin Oil, No. 93 H.B., Hunt. Beach, Orange	2- 6-11	7,590	redrlg. 6,094
Heilman estate, No. 5 Heilman, Seal Beach, Orange	11- 5-12	5,030	cmtd. 5,030
United Oil, No. 1 Schimming, Stanton, Orange	25- 4-11	6,470	sd. sh. drlg.
Bird & Chambers, No. 1 Owens, Grdn. Grove, Orange	31- 4-10	1,200	D.P. stuck

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S. T. R.	Depth	Status
Cole, F. E., No. 1 Giacomini, Santa Maria, Santa Barb.	24-10-35	3,847	sd.. sh. drlg.
Union Oil, No. 18 Cal-Coast, Santa Maria, Santa Barb.	26- 9-34	3,958	sd. sh. drlg.
Oil Group, No. 1 Hyland, Summerland, Santa Barb.	16- 4-26	2,461	sd. sh. drlg.
Texas Co., No. 139 Shiells, Shiells Canyon, Ventura	4- 3-19	1,045	sd. sh. drlg.
Rio Hondo Oil, No. 1 Cosby, Hopper Canyon, Vent.	14- 4-19	1,205	sd. sh. drlg.
Merchants Pet., No. 8 Cochran, Sespe, Ventura	1- 4-20	2,099	sd. sh. drlg.
Continental Oil, No. 16 Grubb, San Miguelito, Vent.	24- 3-24	1,584	sd. sh. drlg.
C. C. M. Oil, No. 31-B Hobson, Rincon, Ventura	17- 3-24	3,870	O.S. drlg.
C. C. M. Oil, No. 9-A Hobson, Rincon, Ventura	15- 3-24	6,660	O.S. drlg.
Tide Water A. O., No. 45 V.L.W., Vent. Ave., Vent.	23- 3-23	9,638	sd. sh. drlg.
Tide Water A. O., No. 17 McGonigle, Vent. Ave., Vent.	23- 3-23	7,692	sd. sh. drlg.
Tide Water A. O., No. 119 Lloyd, Vent. Ave., Vent.	27- 3-23	8,080	sd. sh. drlg.
Tide Water A. O., No. 18 Hartman, Vent. Ave., Vent.	22- 3-23	10,885	redrlg. 9,914
Tide Water A. O., No. 22 Hartman, Vent. Ave., Vent.	22- 3-23	6,285	sd. sh. drlg.
Tide Water A. O., No. 25 Hartman, Vent. Ave., Vent.	22- 3-23	3,882	sd. sh. drlg.
Shell Oil, No. 55 Taylor, Ventura Ave., Ventura	28- 3-23	6,190	sd. sh. drlg.
Shell Oil, No. 117 Taylor, Ventura Ave., Ventura	21- 3-23	2,295	sd. sh. drlg.
Shell Oil, No. 118 Taylor, Ventura Ave., Ventura	21- 3-23	3,521	sd. sh. drlg.
Cal. Alliance Pet., No. 2 Hartman, Vent. Ave., Vent.	22- 3-23	9,499	P.B. 9,425
Cal. Alliance Pet., No. 1 Schmidt, Vent. Ave., Vent.	21- 3-23	5,281	sd. sh. drlg.
British American Oil, No. 1 Barn, Vent. Ave., Vent.	22- 3-23	3,395	sd. sh. drlg.
Lloyd Corp., No. 5 Dabney, Vent. Ave., Vent.	24- 3-23	3,185	sd. sh. drlg.
Trigg, H. C., No. 1 Den, Devil's Den, Kern	11-25-18	496	cleaning out
Franco-Western Oil, No. 18 Front, McKittrick, Kern	8-30-22	2,105	O.S. drlg.
Cal. Crude Oil, No. 18 Front, McKittrick, Kern	34-30-22	1,395	rig to pump
Mid-State Pet., No. 1 Welport, McKittrick, Kern	26-29-21	1,214	rig to pump
Union Oil, No. 1 Weston, Belridge, Kern	13-29-21	6,594	sd. sh. drlg.
Santa Mora Oil, No. 1 Joint, Belridge, Kern	10-28-20	....	bldg. rig
Belridge Oil, No. 23-1 fee, North Belridge, Kern	1-28-20	8,350	completing
Belridge Oil, No. 64-27 fee, North Belridge, Kern	27-27-20	8,062	cleaning out
Texas Co., No. 1 Theta, Shale Hills, Kern	12-28-19	3,395	redrlg. 2,698
Bishop Oil, No. 2 Buchner, Mount Poso, Kern	20-26-28	1,526	pump 75 b.d.
Vedder Pet., No. 21-2 Lambert, Mount Poso, Kern	21-26-28	1,565	rig to pump
Hearte & Tracy, No. 1 Hooper, Mount Poso, Kern	36-26-27	3,329	no O.S.
Premier Extension Oil, No. 1 South, Jasmine, Kern	33-25-27	1,796	sd. sh. drlg.
McDonald & Dearin, No. 5 Kernco, Kern Front, Kern	11-28-27	1,690	sd. sh. drlg.
Dick & Dore Oil, No. 26 Kern, Kern River, Kern	34-28-28	685	pump 5 b.d.
Dick & Dore Oil, No. 27 Kern, Kern River, Kern	34-28-28	103	sd. sh. drlg.
Dick & Dore Oil, No. 29 Kern, Kern River, Kern	34-28-28	528	O.S. drlg.
Dick & Dore Oil, No. 31 Kern, Kern River, Kern	34-28-28	490	sd. sh. drlg.
Hast Oil, No. 7 Kern, Kern River, Kern	34-28-28	586	pump 5 b.d.
Helm & Smith, No. 21 Kern, Kern River, Kern	34-28-28	496	sd. sh. drlg.
Shell Oil, No. 1 Brandt, Round Mountain, Kern	33-28-29	2,280	sd. sh. drlg.
Grizzly Bear Oil, No. 4 Kelly, Round Mountain, Kern	6-28-29	1,815	will redri.
Goodrum & Vincent, No. 4 S.P., Edison, Kern	31-29-30	420	bailing
Wood-Callahan Oil, No. 1 Comm., Edison, Kern	21-30-29	4,420	rig to pump
Morton, L. C., No. 1 Jewett, Arvin, Kern	23-31-29	5,490	sd. sh. drlg.
Western Gulf Oil, No. 45-B, KCL, Fruitvale, Kern	22-29-27	10,090	hd. sh. drlg.
Standard Oil, No. 4 Mushrush, Wasco, Kern	7-27-24	12,880	sd. sh. drlg.
Continental Oil, No. 1 Meyer, Wasco, Kern	7-27-24	13,138	O.S. drlg.
Continental Oil, No. 1 Community, Shafter, Kern	12-28-24	12,940	gr. sd. drlg.
Union Oil, No. 32-34, KCL, Rio Bravo, Kern	34-28-25	11,220	sd. sh. drlg.
Union Oil, No. 45-34, KCL, Rio Bravo, Kern	34-28-25	3,675	sd. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
B. ck., bottom choke.
Br. sh., brown shale.
B.S., basic sediment.
C.&P., cellar and pits.
Cd. or Crd., cored.
C.D., correct depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg., or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.S.T., drill-stem test.
D.P., drill pipe.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe-line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Recvd., recovered.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtrk. or St., sidetracked.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel-line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas, and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T. ck., top choke.
T.P., tubing pressure.
Tr., tract.
Tstd., tested.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.O.O., waiting on orders.
W.P., working pressure.
W.S.O., water shutoff.
W.S.O.O.K., water shutoff O.K.
W.S.R. or W.O.S.R., awaiting standard rig
Wtr., water.

Union Oil, No. 54-34, KCL, Rio Bravo, Kern	34-28-25	7,866	sd. sh. drlg.
Superior Oil, No. 3 Fink, Rio Bravo, Kern	28-28-25	11,325	O.S. drlg.
Superior Oil, No. 2 Weber, Rio Bravo, Kern	27-28-25	10,284	sd. sh. drlg.
Superior Oil, No. 3 Smith, Rio Bravo, Kern	34-28-25	11,490	flow 1,536 b.d.
Superior Oil, No. 1 Merrill, Greeley, Kern	1-29-25	6,070	sd. sh. drlg.
Standard Oil, No. 11-22, KCL, Greeley, Kern	18-29-26	2,844	sd. sh. drlg.
Standard Oil, No. 11-23, KCL, Greeley, Kern	18-29-26	11,510	completing
Standard Oil, No. 12-8, KCL, Greeley, Kern	7-29-26	10,606	sd. sh. drlg.
General Pet., No. 1 Oughton, Greeley, Kern	12-29-25	9,850	sd. sh. drlg.
General Pet., No. 2 Sullivan, Greeley, Kern	12-29-25	9,985	sd. sh. drlg.
Shell Oil, No. 63-25-B, KCL, Ten Section, Kern	29-30-26	8,190	flow 970 b.d.
Shell Oil, No. 76-29-A, KCL, Ten Section, Kern	29-30-26	7,655	sd. sh. drlg.
Shell Oil, No. 38-30-B, KCL, Ten Section, Kern	30-30-26	7,910	sd. sh. drlg.
Tide Water-Cont., No. 33-7-E, KCL, Strand, Kern	7-30-26	8,340	sd. sh. drlg.
Shell Oil, No. 86-12-B, KCL, Strand, Kern	12-30-25	6,562	sd. sh. drlg.
Ohio Oil, No. 19-E, KCL, Canal, Kern	13-30-25	3,364	sd. sh. drlg.
Richfield Oil, No. 38-28-A, KCL, Tupman, Kern	28-30-25	8,210	sd. sh. drlg.
Richfield Oil, No. 74-32-A, KCL, Tupman, Kern	32-30-25	8,633	redrlg. 8,520
Richfield Oil, No. 78-29-A, KCL, Tupman, Kern	29-30-25	8,527	O.S. drlg.
Richfield Oil, No. 276-29-A, KCL, Tupman, Kern	29-30-25	7,660	sd. sh. drlg.
Richfield Oil, No. 12-3-C, KCL, Cole's Levee, Kern	3-31-25	9,470	sd. sh. drlg.
Standard Oil, No. 20-5, KCL, Cole's Levee, Kern	9-31-25	4,292	sd. sh. drlg.
Ohio Oil, No. 8-F, KCL, Cole's Levee, Kern	11-31-25	7,781	sd. sh. drlg.
Foster, Robert, No. 1 Hollingsworth, Md.-Sun., Kern	22-32-23	1,202	sd. sh. drlg.
Signal Oil & Gas, No. 7 Kendon, Mdwy.-Sun., Kern	35-32-23	2,505	pump 170 b.d.
Shell Oil, No. 45-9 B.V.A., Midway-Sunset, Kern	9-32-25	11,521	hd. sd. drlg.
National Oil, No. 36 Sunset, Midway-Sunset, Kern	35-32-23	1,456	pump 40 b.d.
McDonald, Joseph, No. 19 Midway, Md.-Sunt., Kern	26-31-22	1,544	rig to pump
Tide Water A. O., No. 4 Midway, Md.-Sun., Kern	35-31-22	1,265	rig to pump
Ohio Oil, No. 43-3-B, KCL, Paloma, Kern	3-32-26	10,361	fish D.P.
Western Gulf-Texas, No. 74-3-A, KCL, Paloma, Kern	3-32-26	11,220	hd. sh. drlg.
Oil Scout, No. 1 Tejon, Comanche Point, Kern	27-32-29	5,505	will deepen
Richfield Oil, No. 1 Ranch, Tejon Ranch, Kern	2-10-19	3,992	sd. sh. drlg.
Richfield Oil, No. 2, KCL, Wheeler Ridge, Kern	28-11-20	1,188	sd. sh. drlg.
Erickson & Swanson, No. 2 Gravender, Kgsbrg, Fres.	22-16-22	396	hd. sh. drlg.
Jergins Trust, No. 1 Cheney, Panoche Creek, Fresno	29-14-13	7,892	sd. sh. drlg.
Texas Co., No. 1 S.P., Turk anticline, Fresno	23-17-15	10,001	sd. sh. drlg.
Standard Oil, No. 53-19-B fee, N.E. Coalinga, Fresno	19-19-16	7,202	sd. sh. drlg.
Standard Oil, No. 68-19-B fee, N.E. Coalinge, Fresno	19-19-16	7,095	sd. sh. drlg.
Standard Oil, No. 82-18-B fee, N.E. Coalinga, Fresno	19-19-16	6,137	sd. sh. drlg.
Union Oil, No. 55-18 Cook, N.E. Coalinga, Fresno	18-19-16	5,572	idle
Amerada Pet., No. 1-20-B Ewing, N.E. Coalinga, Fres.	20-19-16	7,190	sd. sh. drlg.
Texas Co., No. 5-20-B, Kimberlin, N.E. Coalinga, Fres.	20-19-16	6,185	sd. sh. drlg.
Superior Oil, No. 4 Husong, N.E. Coalinga, Fresno	18-19-16	8,255	flow 1,208 b.d.
Pure Oil, No. 44-30-B, N.E. Coalinga, Fresno	30-19-16	7,080	sd. sh. drlg.
Wilshire Oil, No. 62-30-B, N.E. Coalinga, Fresno	30-19-16	6,477	sd. sh. drlg.
Bandini Pet., No. 71-30-B, N.E. Coalinga, Fresno	30-19-16	3,883	sd. sh. drlg.
Lytle, R. S., Agent, No. 35-18-F, S.E. Coalinga, Fres.	18-20-16	5,482	sd. sh. drlg.
Lytle, R. S., Agent, No. 48-18-F, S.E. Coalinga, Fres.	18-20-16	7,339	sd. sh. drlg.
Lytle, R. S., Agent, No. 68-18-F, S.E. Coalinga, Fres.	18-20-16	5,966	sd. sh. drlg.
Standard Oil, No. 88-13-C fee, S.E. Coalinga, Fresno	13-20-15	2,655	sd. sh. drlg.
Standard Oil, No. 22-19-F fee, S.E. Coalinga, Fresno	19-20-16	7,830	O.S. drlg.
Standard Oil, No. 33-19-F fee, S.E. Coalinga, Fresno	19-20-16	7,451	br. sh. drlg.
Standard Oil, No. 42-19-F fee, S.E. Coalinga, Fresno	19-20-16	8,029	completing
Superior Oil, No. 3-B Cagie, S.E. Coalinga, Fresno	6-20-16	3,141	sd. sh. drlg.
Texas Co., No. 1 Boston, Westhaven, Fresno	14-20-18	10,747	hd. sh. drlg.
Union Oil, No. 9 King, Kettleman N. Dome, Fresno	29-21-17	8,563	sd. sh. drlg.
K. N. D. A., No. 27-18-J, Kettleman N. Dome, Fresno	18-21-17	10,930	P.B. 10,870
K. N. D. A., No. 334-18-J, Kettleman N. Dome, Fresno	18-21-17	10,905	sd. sh. drlg.
K. N. D. A., No. 4-16-Q, Kettleman N. Dome, Fresno	16-22-18	7,070	sd. sh. drlg.
K. N. D. A., No. 34-22-Q, Kettleman N. Dome, Kings	22-22-18	7,775	flow 775 b.d.
K. N. D. A., No. 6-26-Q, Kettleman N. Dome, Kings	26-22-18	8,250	flow 1,224 b.d.
K. N. D. A., No. 38-26-Q, Kettleman N. Dome, Kings	26-22-18	8,368	P.B. 8,035
Standard Oil, No. 72-19-J, Kettleman N. Dome, Fresno	19-21-17	10,903	flow 974 b.d.
Standard Oil, No. 321-29-J, Kettleman N. Dome, Fres.	29-21-17	9,741	hd. sh. drlg.
Standard Oil, No. 334-29-J, Kettleman N. Dome, Fres.	29-21-17	7,420	sd. sh. drlg.
Standard Oil, No. 57-3-P, Kettleman N. Dome, Kings	3-22-17	8,525	completing
Standard Oil, No. 41-27-Q, Kettleman N. Dome, Kings	27-22-18	8,115	cleaning out
Standard Oil, No. 63-27-Q, Kettleman N. Dome, Kings	27-22-18	7,993	sd. sh. drlg.
Standard Oil, No. 72-27-Q, Kettleman N. Dome, Kings	27-22-18	8,040	completing
Standard Oil, No. 85-27-Q, Kettleman N. Dome, Kings	27-22-18	8,325	P.B. 8,075
Standard Oil, No. 41-35-Q, Kettleman N. Dome, Kings	35-22-18	7,826	sd. sh. drlg.
Bristol Oil, No. 1 Smith, Kettleman S. Dome, Kings	35-24-19	8,054	cleaning out
Shell Oil, No. 1 Cohn, Tulare Lake, Kings	4-22-19	11,440	gr. sd. drlg.
Holly Dev., No. 1 Meherin, Huasna, San Luis Obispo	7-32-13	3,197	sd. sh. drlg.
Cal. Fuel Oil, No. 3 Alberta, Huasna, San Luis Ob.	5-32-13	1,051	sd. sh. drlg.
Priest Valley Oil, No. 1 Greve, Priest Valley, Mont.	22-20-12	2,464	gr. sh. drlg.
Buttes Oilfields, No. 6 Buttes, Marysville, Sutter	1-15- 1	7,691	idle
Richfield Oil, No. 2 Hill, Potrero, Solano	5- 4- 1	4,000	dry; abd.
Tassajara Oil, No. 1 Rasmussen, Tass., Contra Costa	9- 2- 1	9,777	cmtd. 8,935

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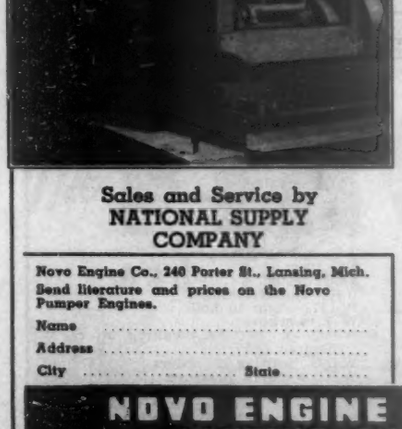

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OKLAHOMA

Week Ended April 20

NORTHERN OKLAHOMA

Beckham County

Fred Coogan's No. 1 Kinchen, SE SE SE Sec. 4-9-25w. Dolo. 3,260 ft.; L. 3,463-3,718 ft., T.D.; S.O.&G.

Caddo County

Sinclair Prairie Oil Co.'s No. 1 Groman, SW NW NW Sec. 1-16-13w. Wlx. 9,179 ft.; sd. 10,674 ft.; cd. 10,871-75 ft.; N. S.; Arb. 10,922 ft.; T.D. 11,026 ft.; P.B. 9,975 ft.

Creek County

Bryan Pet. Co.'s No. 1 Ah-Say. NE NW NE Sec. 34-14-7. Prue 2,556 ft., S.O.; T.D. 2,652 ft.; P. 40 B.O. in 24 hrs.; shot; C.O.

Indo Oil Co.'s No. 1 Slick, NW NW NW Sec. 1-16-9. S.O. 1,145-78 ft.; T.D. 1,255 ft.; C.O.

Dewey County

Magnolia Pet. Co.'s No. 1 Fiekes. C SW SW Sec. 31-18-14w. D.S.T. rec. mud at 7,718 ft.; drlg. 9,108 ft.

Garfield County

Magnolia's No. 1 Kring. C SE SW Sec. 12-21-3w. Cd. 5,590-5,704 ft., N.S.; S.D. rprs. 5,720 ft.

Grant County

Continental Oil Co.'s No. 1 Krichmar, SE SE NE Sec. 28-28-5w. T.D. 5,509 ft. in 2nd Wlx.; N.S.

Hughes County

J. W. Boydston's No. 1 Robstein, C NW SE Sec. 11-6-9. S.D. 976 ft.

Hall & Jordan's No. 1-A Barker, SE SE SW Sec. 3-8-9. S.O. in sd. 2,074 ft.; T. D. 2,109 ft.; est. 2 B.O.; S.D.

Southwestern Drlg. Co.'s No. 1 Diamond, C E½ NW SE Sec. 33-9-9. W.O.C. 185 ft.

Kay County

Malarnee Oil Co.'s No. 1 Harris, C SW NE Sec. 14-25-1. Miss. 4,050 ft.; chat with S.O. 4,063-4,105 ft.; T.D. 4,138 ft.; C.O. and swbg.

Kingfisher County

Olsen Drlg. Co.'s No. 1 Geis, C NE SW Sec. 15-18-9w; (O.W.D.D.). O.T.D. 8,507 ft.; drlg. 8,945 ft.

Phillips Pet. Co.'s No. 1 Drape. C NW SE Sec. 30-18-5w. Cg. 5,235 ft.

Kiowa County

Frank Dillard et al's No. 1 Hobbs, SE SE NW Sec. 35-6-17w. Set 6⅝-in. 525 ft.; T.D. 690 ft.

J. M. Henry's No. 1 Huff, SW SW NW Sec. 32-7-18w. Gas 1,512-1,704 ft., T.D.; may D.D.

Southwestern Okla. O. & G. Co.'s No. 2 Foltz, NW SE SE Sec. 10-6-18w. S.D. rprs. 935 ft.

Lincoln County

R. M. Purcell et al's No. 1 Wolcott, NW NW NW Sec. 2-13-4e. R.O.G.

Logan County

Kerlyn Oil Co.'s No. 1 Chitwood, NE NE SW Sec. 15-16-4w. Drlg. 2,819 ft.

McIntosh County

Phillips' No. 1 Blankenship, C SW NW Sec. 33-10-13. Carrying 7-in. and drlg. 3,281 ft.

Muskogee County

R. Garrett's No. 1 Escoe, SW SW SE Sec. 16-13-17. S.D. 1,685 ft.

Okfuskee County

Burke-Greis' No. 1 Dew, NE NE NE Sec. 9-12-9. R.U.S.T.

C. A. Yoakum's No. 1 Long, C SW SE Sec. 34-12-9. Drlg. 3,467 ft.

C. A. Yoakum's No. 1-A Replogle-Johnson, NW NW NE Sec. 11-11-10. R.U.S.T. at T.D. 3,177 ft.

Okmulgee County

B. H. Young's No. 1 Miller, NW SW NE Sec. 6-15-14. T.D. 1,056 ft.; H.F.W. and S.S.O.

Payne County

Comoll-Haskins' No. 1 Meyer, NW SE SE Sec. 17-17-6. Drlg. 1,140 ft.

Texas Co.'s No. 1 Burroughs, C E½ NE NW Sec. 11-17-1. Wlx. 4,925 ft.; pay 4,942-45 ft., T.D.; F. 333 B.O. in 11 hrs.

Seminole County

Edwards & Johnson's No. 1 Long, SE NW NW Sec. 1-6-5. Drlg. 820 ft.

Murta et al's No. 1 Harber, C W½ NE SE Sec. 4-10-6. W.O.C. 112 ft.

Pottawatomie County

Alma Oil Co.'s No. 1 Harrington, NW SE NW Sec. 24-9-4. Drlg. 4,110 ft.

J. W. Meazel's No. 1 Billington, SE NE NE Sec. 26-9-4. Wlx. 4,473 ft.; drlg. 4,493 ft.

Washita County

Continental Oil Co.'s No. 1 School Id., C NE Sec. 16-8-16w. Gr. wsh. 3,005 ft.; drlg. 5,170 ft.

SOUTHERN OKLAHOMA

Atoka County

Kirksey's No. 1 Baskett, SW SE SE Sec. 7-3s-10. Drlg. 340 ft.

Marshall County

Johnson et al's No. 1 Godfrey, SW SE NE Sec. 14-6s-6e. Vla. 2,627 ft.; S.S.O.; T.D. 4,582 ft.; perf.; N.S.; big. down to test.

May Oil Corp.'s No. 1 Sacrea, SW NE SW Sec. 17-5-5. Sd. and S.G. 1,023-27 ft.; blk. sh. 1,033-37 ft.; gas sd. 1,120-ft.; est. 6,000,000 cu. ft.; attempt to drill ahead.

Pure Oil's No. 1 Little, W½ NE SE Sec. 28-5s-7e. At 5,103 ft.; est. 30 B.O.P.H. and 3,000,000 cu. ft. gas; cd. 5,555-66 ft.; T.D. 5,640 ft.; F. 2,354 B.O. in 15 hrs.; gas incr.

Stephens County

Edwin Bristow's No. 1 Damron, SE NW SW Sec. 25-2s-6w. T.D. 1,545 ft.; prep. to test.

Jackson's No. 1 Marshall, SE NE NE Sec. 1-1s-6w. Drlg. 2,000 ft.

Tillman County

F. W. Johnson's No. 1 Longacre, NE NE SE Sec. 32-25-17w. T.D. 3,268 ft.; F. 170 B.O. and 30 B.W.P.D.; gr. 42.

KANSAS

Week Ended April 20 (Descriptions are East unless marked otherwise)

Barton County

Geo. Hinkle's No. 1 Krautwurst, C N½ NE SE Sec. 34-16-11w. Tpka. 2,750 ft.; Lans. 3,119 ft.; Arb. 3,394 ft.; 1,500 ft. O.I.H. at T.D. 3,402 ft.; 60 B.O.P.D.; comp.

McMorrow's No. 1 Tonkin, SW SW SW Sec. 4-20-12w. S.D. 2,610 ft.

Cloud County

E. T. Lindsay et al's No. 1 LeBlanc, C S½ SW NW Sec. 35-6-1w. Sur.

Cowley County

Atlantic and Sinclair's No. 1 Smith, SE SE NW Sec. 33-33-4. Tpka. 1,365 ft.; drlg. 2,785 ft.

C. L. Carlock's No. 1 Starkey, CSL SE SE Sec. 21-30-7. C.O. 1.547 ft.

Foster Oil Co.'s No. 2 Howard. E½ SW SW Sec. 8-34-4. Drlg. 704 ft.

Hartman & Brewer's No. 1 Falkingham CNL NW SE Sec. 22-30-4. Drlg. 2,150 ft.

McKnab's No. 1 Coats, NE NE NE Sec. 18-34-4. Drlg. 495 ft.

McKnab's No. 1 Sherwood, NE SE SW Sec. 4-35-5. Drlg. 1,976 ft.

McKnab's No. 1 Snyder, C W½ NW NW Sec. 15-34-3. Drlg. 1,685 ft.

Markey & Mission's No. 1-A Hunt, SW SW NE Sec. 16-34-5. T.D. 1,756 ft.; killed gas; U.R. 1,756 ft.

Morgan Pet. Co.'s No. 1 Dunn, CSL SW NE Sec. 2-35-5. S.D. 2,816 ft.

J. W. Murfin's No. 1 Jarvis, N½ SW NE Sec. 19-31-5. Loc.

E. B. Shawver's No. 1-B Widener, C S½ SE NW Sec. 11-30-4. Miss. 2,825-40 ft.; C.O.

Earl Wakefield's No. 1-A Dunn. C W½ SE NE Sec. 3-35-5. Drlg. 331 ft.

Dickinson County

Midland Oil Co.'s No. 1 Haines, SE SW SW Sec. 23-16-4. S.D. 1.000 ft.

Ellis County

Central Pet. Co.'s No. 1 Lynn, NE NE SW Sec. 14-11-18w. Drlg. 3,002 ft.

Dickey Oil's No. 1 Stone, N½ NE SW Sec. 4-11-17w. Drlg. 3,265 ft.

Ellsworth County

Pryor & Lockhart's No. 1 Stratman, C W½ NW NW Sec. 1-17-10w. Drlg. 690 ft.

Greenwood County

Ashlock et al's No. 2-A Lindemood, NE NW SW Sec. 7-25-13. S.D. 430 ft.

A. A. Hinze et al's No. 1 Hester, NW SW NE Sec. 1-22-12. S.D. 510 ft.

C. L. Sheedy et al's No. 1 Hook, NW SW NW Sec. 4-22-10. Miss. 2,333-69 ft., T. D.; B. 2 B.O.P.D.

Johnson County

McCain et al's No. 1 Doan, CEL NW SE Sec. 34-12-22. Drlg. 1,410 ft.

Leavenworth County

Wamhoff & Lebsack's No. 1 Moduska. C SE NE Sec. 36-8-20. Drlg. 605 ft.

McPherson County

Aladdin Pet. Co.'s No. 1 Bitikofer, CNI NE NW Sec. 1-20-1w. Lans. 2,315 ft.; Miss. 2,885 ft.; rng. csg.

C. L. Carlock's No. 1 Hoyer, C SE NW Sec. 6-21-1w. Stain 3,090 ft.; lost circ. 3,382 ft.

H. & M. Drlg. Co.'s No. 1 Swenson, S½ SW NE Sec. 9-18-4w. Drlg. 1,455 ft.

Marshall County

Frankfort Drlg. Co.'s No. 1 Shearer, SE NW NW Sec. 29-4-9 (O.W.D.D.). O.T.D. 822 ft.; S.O.; C.O.; S.D.O.

Marion County

Harrington & Lorieaux's No. 1 Belton SE SE NE Sec. 30-17-4. Drlg. 1.892 ft.

Reno County

Dutton et al's No. 1 Green, SE SE SE Sec. 8-23-4w. Drlg. 2,340 ft.

Rice County

F. G. Holl's No. 1 Wilkens, NW NW NE Sec. 28-18-6w. Drlg. 350 ft.

Rooks County

Lario O. & G. Co.'s No. 1 Morrison, C S½ SW NE Sec. 32-10-17w. Drlg. 2,360 ft.

Seaney & Clampitt's No. 1 Morrison, CSL SW NE Sec. 32-10-17w. Loc.

Russell County

I. W. Murfin et al's No. 1 St. Aubyan. CSL SW SE Sec. 1-15-15w. Tpka. 2,710 ft.; Lans. 3,000 ft.; drlg. 3,077 ft.

Simpson Oil's No. 1 Deines, CWL NW SW Sec. 33-14-14w. Drlg. 1,435 ft.

Sedgwick County

G. A. Fuller's No. 1 Stilt, CSL SE NE Sec. 21-27-1w. S.S.O. 2,678 ft.; incr. at 2,798-2,806 ft.; P. 2 B.O. and 20 B.W. P.H.

Schermerhorn Oil Co.'s No. 1 Sanders, NE NW SE Sec. 2-25-2. Drlg. 1,545 ft.

Sunray Oil Co.'s No. 1-A McMillan, CWL NW NW Sec. 14-29-2w. Miss. 3,564 ft., D.S.T. 3,575 ft. and rec. S.O. and mud. Arb. 4,030-55 ft., T.D.; P.B. 3,590 ft. at 3,570 ft. S. 11 B.O. and 30 B.W. in 8 hrs.; D.&A.

Trego County

W. N. Bartlett's No. 1 Phannenstell, C SE NW Sec. 30-13-25w. Drlg. 2,581 ft.

J. M. Trigg's No. 1 Rasek, C NE NE Sec. 13-12-23w. Lans. 3,683 ft.; stain 3,685-3,703 ft.; Arb. 4,124 ft.; T.D. 4,209 ft.; N.S.; D.&A.

Woodson County

Cooper's No. 1 Sowder, SE SE NW Sec. 31-25-14. Drlg. 457 ft.

MISSOURI

Adair County

Eddington et al's No. 1-A Clark, NE NE SE Sec. 8-63-14w. Htn. 739 ft.; S.D. 763 ft.

Eddington-McAlpin's No. 1 Johnson-Capps, SW SW Sec. 31-64-15w. S.D. 615 ft.

Clay County

Ben I. Hall's No. 1 Masterson, C SW SE Sec. 35-52-32w. Drlg. 420 ft.

DeKalb County

E. H. Lawhon's No. 1 Gottschall, C SE SE Sec. 18-59-32w. Drlg. 600 ft.

Holt County

Brin & Nathan's No. 1 Decker, C NW NW Sec. 1-61-38w. T.D. 1,030 ft.; S.D. for csg.

Macon County

Ray Dorris' No. 1 Jones, NW NW Sec. 16-58-17w. Loc.

Platte County

Roach-Vincent et al's No. 1 Dillingham, C NE SW Sec. 16-53-34w. T.D. 1,055 ft.; S.D.

Mercer County

Geo. Moore's No. 1 Moss, NW SW SE Sec. 30-65n-24w. Drlg. 1,900 ft.

Schuyler County

T. E. Baldwin's No. 2 Johnson, SW NE NE Sec. 21-65-15w. Spd.

NEBRASKA

Cass County

Golden Rod Oil Co.'s No. 1 Sparer, SE SE SE Sec. 8-11-13e. S.D. 1,205 ft., Vla. L.

Dakota County

Peder Skriver's No. 1 Armor, NE NE NE Sec. 33-28-8. T.D. 1,100 ft.; S.D.

Dawes County

G. E. Mitchell's No. 1 Palmer, NW NW SW Sec. 1-33-50w. (O.W.D.D.); O.T.D 2,964 ft.; R.U. to D.D.

Keith County

California-Nebraska Oil, Ltd.'s No. 1 Guststuehm, NW NW NW Sec. 21-14-37w. Dak. 2,772 ft.; S.O. 2,895-2,901 ft.; cd. 3,258-61 ft.; S.S.O.; S.D. 3,300 ft.

Fillmore County

Dan Kornfeld's No. 1 Mathis, NE NE NE Sec. 22-5-1w. U.R. 2,286 ft.

Pawnee County

Blaser & Hoerman's No. 1 Wilson, NE NW NW Sec. 4-1-10. S.S.O. 470-71 ft.; drlg. 476 ft.

Richardson County

Forest City Basin Synd.'s No. 1 Windle, SE NE SE Sec. 3-1n-15e. Pits.

Pawnee Royalty Co.'s No. 1 Bolce, CSL N½ NE NE Sec. 18-1n-16e. O.W.D.D.; drlg. 2,815 ft.

Pawnee Royalty Co.'s No. 1 Bucholz, C NW SW Sec. 17-1n-16e. Loc.

Uhri Oil Co.'s No. 1 Ogle, NE NW SE Sec. 9-1n-14e. M.I.M.

Uhri Oil Co.'s No. 1 Stauffer, SW SW NE Sec. 22-1n-13e. T.D. 550 ft.; preparing to resume.

Scotts Bluff County

Albert Wood et al's No. 1 McHenry, SE NE NE Sec. 33-23-57w. T.D. 625 ft.; S.D.

J. A. Fairy Pet.'s No. 1 McCulley, C SE SE Sec. 35-23-58w. S.D. 2,035 ft.

ARKANSAS

Clark County

J. H. Coker and J. P. Grieves' No. 1 C. McClellan, 330 ft. NW cor. NW SE Sec. 11-20-21. T.D. 1,145 ft.; S.D. repairs.

W. S. King's No. 1 N. Ross, 640 ft. S. 359 ft. W., NE cor. S½ SW Sec. 3-10-21. T.D. 2,158 ft.; S.D.

W. P. Wilson's No. 1 Hamilton & Mathews, 50 ft. W, C SE NE Sec. 31-10s-20w. S.D. high wtr. 1,622 ft.

Columbia County

Ark. Fuel Oil Co.'s No. 3-B King, 330 ft. S, 665 ft. W, NE cor. SE NW Sec. 21-17-20. Set 9⅝-in. csg. 2,190 ft.; T. Buckner 7,545 ft.; T. Smackover 7,576 ft.; set 6-in. csg. 7,660 ft.; W.O.C.

F. M. Hood's No. 1 A. C. Warren, C NE SE Sec. 9-16-22. Set 9⅝-in. csg. 2,123 ft.; T.D. 7,314 ft.; set 5½-in. csg. 7,290 ft.; W.O.C.

Hunt Oil Co.'s No. 1 E. Garner, C N½ NE NE Sec. 25-17-20, and N½ NW NW Sec. 30-17-19. 13⅜-in. csg. 155 ft.; set 9⅝-in. csg. 2,150 ft.; T.D. 2,160 ft.; W.O.C.

McAlester Fuel Oil Co.'s No. 1 H. Sayers unit, C NE NW Sec. 15-18-22. Set 9⅝-in. csg. 4,060 ft.; T.D. 8,876 ft.; T. por. 8,802 ft.; set 5½-in. csg. 8,870 ft.; washing in.

J. K. Mahoney's No. 3 Emma Riley, C SE SW Sec. 11-18-19. Set 16-in. csg. 138 ft.; drlg. rd.&gr. sh. 6,207 ft.

Tide Water Asso. Oil Co. and Seaboard Oil Corp.'s No. 1 W. T. Beene, C NE NW Sec. 14-18-19. Set 9⅝-in. csg. 2,596 ft.; drlg. rd.&gr. sh. 6,817 ft.

Tide Water Asso. Oil Co. and Seaboard Oil Corp.'s No. 2 J. T. Beene, C NE NW Sec. 15-18-19. Set 13⅜-in. csg. 132 ft.; will not flow; S.I.; T. por. 8,234 ft.; T.D. 8,247 ft.; rocked with gas; would not flow; acd. with 1,000 gal.; flwd. 134 B.O. and 58 bbl. S.W. daily; 7/64-in. ck.; flwd. 57 bbl. oil and 80 bbl. S.W. per day; tstg. 8,247 ft.

Tide Water Asso. Oil Co. and Seaboard Oil Corp.'s No. 1 C. H. Murphy et al, C SW NE Sec. 14-18-19. Set 9⅝-in. csg. 2,523 ft.; drlg. rd.&gr. sh. 6,791 ft.

G. H. Vaughn et al's No. 1 Mahoney, C NW NW Sec. 13-18-19. Set 9⅝-in. csg. 2,518 ft.; cg. 8,163 ft.

Faulkner County

Cato Oil Co., Inc.'s No. 1 R. R. Harrell, 330 ft. SE cor. SE SW Sec. 35-4n-12w. T.D. 2,438 ft.; U.R. csg. and set 7-in. csg. 2,370 ft.; bailing to test.

Lafayette County

Atlantic Ref. Co.'s No. 1 Bodcaw Lbr. Co., Sec. 29-17-23. Set 16-in. csg. 341 ft.; set 9⅝-in. 4,222 ft.; drlg. 4,625 ft.

A. H. Boswell's No. 1 C. H. Ellis, 175 ft. NW cor. SW NE Sec. 19-16-23. Drlg. 2,783 ft.

Lonoke County

Lunnon Howell & Ford's No. 1 City of Cabot, C NE Lot 1, Blk. 6, Sec. 18-4n-9w. Set 4½-in. csg. 878 ft.; drlg. 1,080 ft.

J. F. Russell's No. 1 J. T. Gunter, 440 ft. N, 577 ft. W. SE cor. Sec. 17-5n-10w. Drld. sd. S.S.O. 2,231-45 ft.; drlg. 2,312 ft.

Miller County

Standard Oil Co. of La.'s No. 1 W. P. Sturgis, 660 ft. S and W. C Sec. 1-17-27. Set 9⅝-in. csg. 2,497 ft.; drlg. 7,337 ft.

Nevada County

Velma Oil Co.'s No. 1 T. M. Bemis, 330 ft. NW cor. NW NE Sec. 23-10s-22w. Set 10-in. csg. 66 ft.; S.D. 68 ft.

Ouachita County

Liberty Oil Co.'s No. 1 P. T. Hildebrand, 660 ft. S, 330 ft. W, NE cor. SE¼ Sec. 28-15-15. O.W.W.O.; O.T.D. 4,934 ft.; reperf. csg. 2,600-25 ft.; tstd. S.W. and recmtd. perf.; arng. reperf.; set cmt. plug 2,680 ft.; ripped csg. 2,598-2,602 ft.; tstd. S.S.O.; perf. csg. 2,598-2,625 ft.; T.D. 2,680 ft.; pmpg. est. 100 B.P. D. S.W.; arng. P.B. to Nac. sd.

Pulaski County

Coker Oil Corp.'s No. 1 Huffman, 330 ft. NW cor. NW SW SW Sec. 29-4n-11w. T.D. 1,763 ft.; W.O.

Saline County

A. W. Givens' No. 1 Williams, 375 ft. S, 420 ft. E, NW cor. NE NE Sec. 18-3s-15w. S.D. sh. 494 ft.

Sevier County

R. A. McArthur's No. 1 Bell est., 20 ft. SE cor. SE SW Sec. 29-9s-32w. S.D. 732 ft.

St. Francis County

D. T. Hargraves et al's No. 1 J. T. Wellford, 400 ft. N, 300 ft. W, SE cor. NE NE Sec. 29-4n-1w. R.U.

Union County—Schuler

Delta Drlg. Co.'s No. 1 J. C. Morgan, 330 ft. S and W. C Sec. 13-18-18. Set 9⅝-in. csg. 1,537 ft.; set 5½-in. csg. 7,588 ft.; perf. 7,558-70 ft.; set tbg. on pkr. 7,530 ft.; tstd. S.W.; sqzd. and reperf. 7,562-73 ft.; swbg. to tst. 7,593 ft.

Union County—Other

Barnsdall Oil Co.'s No. 1 North Central Texas, 272 ft. S, 327 ft. E, NW cor. Sec. 5-18-14. Drlg. 50 ft.

Berg & Laney's No. 1 Cutrer, 150 ft. N, 660 ft. W, SE cor. NW SW Sec. 21-17-14. Cd. 2,727-28 ft.; rec. 7-in. por. sd.; cd. 2,728-35 ft.; rec. 7½ ft. soft por. sd., salty taste; drlg. by fish 350 ft.; T.D. 3,370 ft.; set 5½-in. csg. 2,771 ft.; perf. 2,702-05 ft.; bailed down 1,000 ft. and tstd. S.W.; recmtd. perf. 2,601-03 ft. and reperf. 2,572-74 ft.; T.D. 2,575 ft.; changing to smaller rig.

Fohs Oil Co.'s No. 1 Grace, C SE SW SE Sec. 31-17-14. Junk in hole 2,100 ft.; P.B. 800 ft.; lost returns 2,187 ft.; arng. res.; T.D. 3,349 ft.; rng. elec. sur.

Kinard Curtis et al's No. 1 J. A. Kelly, 330 ft. SW cor. SE SW SW Sec. 9-17-14. Set 10-in. csg. 203 ft.; Graves sd. 2,658-64 ft.; showed slight sat.; D.S.T. 2,651-64 ft. open 4 min. rec. est. 500,000 cu. ft. gas and 120 ft. drlg. fluid; ¼-in. B.H. ck.; B.H.P. 950 lb.; set 6-in. csg. 2,659 ft.; washed but would not flow; swbg. to test 2,664 ft.

McCresslen Oil Co.'s No. 3 J. C. Parker, 250 ft. N, 400 ft. E. SW cor. Sec. 3-18-13. Set 7-in. csg. 3,556 ft.; T.D. 3,596 ft.; W.O.S.R.

"I can't quit thinkin' about the way that Sievers Reamer stabilizes the drill string!"

LOUISIANA

NORTH LOUISIANA

Bienville Parish

Ark. La. Gas Co.'s No. 1-A Carter, 1,372 ft. N, 90 ft. E, SW cor. Sec. 12-16-10. Set 13⅜-in. csg. 149 ft.; 9⅝-in. csg. 1,238 ft.; T.D. 1,260 ft.; W.O.C.

Bossier Parish

Premier Dev. Co.'s No. 1 Mehaffey, 150 ft. S, 1,980 ft. W, NE cor. Sec. 27-19-11. Set 12½-in. csg. 155 ft.; W.O.C.

Triangle Drlg. Co.'s No. 2 Chatman, 1,977 ft. E, 1,995 ft. S, NW cor. Sec. 18-17-11. Set 5½-in. csg. 3,120 ft.; reset csg.; W.O.C.

Triangle Drlg. Co.'s No. 4-C Skannal, 332 ft. S, 233 ft. W, NE cor. Sec. 13-17-12. Set 5½-in. csg. 2,998 ft.; T.D. 3,010 ft.; W.O.C.

Union Prod. Co.'s No. 2-B Thigpen & Herold, 1,245 ft. S, 1,388 ft. E, NW cor. Sec. 19-17-11. T.D. 5,215 ft.; set 7-in. csg. 5,167 ft.; perf. 4,946-5,076 ft.; tstd. 22,500,000 cu. ft. gas; arng. acd.

Caddo Parish

F. W. Burford's No. 1 Wallis, 660 ft. SW cor. NW SW Sec. 5-23-15. Set 5½-in. csg. 6,011 ft.; tstg.; T.D. 6,109 ft.

L. M. Calhoun, Jr., Tr.'s No. 1-A Chesire, Sec. 32-21-15. Set 6-in. 1,392 ft.; acd. with 4,000 gal.; W.O.S.R. 1,552 ft.

D. T. Cauble's No. 1 Darnell, Sec. 17-22-16. Set 10-in. csg. 80 ft.; drlg. sh. 3,110 ft.

Cooper Oil Co.'s No. 2-B Stiles, Sec. 33-21-16. Set 7-in. csg. 944 ft.; T.D. 960 ft.; W.O.S.R.

Davidson & Brown's No. 1 Wells, Sec. 10-21-15. Set 8-in. csg. 1,597 ft.; acd. with 4,000 gal.; pmpd.; S.O. 1,789 ft.; T.D. 3,000 ft.; set 5½-in. csg.; acd. with 3,000 gal.; tstd. S.W.; S.O.; pld. csg. and P.B. 2,050 ft.

D. L. Johnson's No. 1 Single Terry, Sec 10-20-16. Drlg. sh.&sd. 1,016 ft.

L. O. Gandy's No. 1 Whatley, Sec. 12-20-16. Set 10-in. csg. 42 ft.; drlg. 520 ft.

J. P. Griffin's No. 2 Muslow, Sec. 26-21-16. Set 10-in. csg. 40 ft.; W.O.C.

Kendricks & Bashaw's No. 1 Huckaby Parker, Sec. 14-22-16. T.D. 1,816 ft.; S.D.

L. & A. Oil Co.'s No. 4 Burton, Sec. 7-20-15. Drlg. sh. 1,025 ft.

Magnolia Pet. Co.'s No. 33 Dillon, Sec. 24-21-15. Set 10¾-in. csg. 40 ft.; W.O.C.

R. Manziel et al's No. 2 City of Shreveport, Sec. 35-18-14. Set 9-in. csg. 1,220 ft.; set 5½-in. csg. 5,579 ft.; T.D. 5,593 ft.; W.O.C.

R. L. Milam's No. 1 Waldron, Sec. 12-20-16. Set 5½-in. csg. 1,357 ft.; will acd.

Murray Samuel's No. 1 Butler Howard, Sec. 12-20-16. Set 7-in. csg. 1,320 ft.; W.O.C.

H. Philip's (Baker & Wissman) No. 1 Muslow, Sec. 31-21-15. Set 10-in. csg. 50 ft.; S.D. 1,220 ft.; rep. rig.

Providence Oil Co.'s No. 6 Bostwick, Sec. 13-22-16. Set 7-in. csg. 2,624 ft.; W.O.C.

Sklar Oil Corp.'s No. 1 Hobbs, Sec. 21-21-15. Set 10-in. csg. 40 ft.; W.O.C.

Stanolind O. & G. Co.'s No. 1 Head, Sec. 26-21-15. Set 8⅝-in. csg. 91 ft.; set 5½-in. csg. 1,401 ft.; T.D. 1,580 ft.

Stanolind O. & G. Co.'s No. 14 Slattery, Sec. 21-21-15. Setting csg. 1,595 ft.

E. A. Stiller's No. 2 Stiles, Sec. 28-21-16. Set 6-in. csg. 2,320 ft.; T.D. 2,378 ft.

J. G. Strahan's No. 3-A Hart, Sec. 29-21-16. Set 10-in. csg. 40 ft.

J. G. Strahan's No. 2-B Stiles, Sec. 32-21-16. Drlg. sh.&sd. 2,126 ft.

L. L. Sugar's No. 5 Hart, Sec. 22-21-16. Set 6⅝-in. csg. 1,022 ft.; W.O.C.

Jack Terrell's No. 1 Welch, Sec. 3-20-16. Set 4½-in. csg. 1,434 ft.; T.D. 1,540 ft. acd. 4,000 gal.; tstd. S.O. and S.W.

Texas Co.'s No. 3 Atkins fee, Sec. 7-20-15. Set 6⅝-in. csg. 1,361 ft.; acd. 4,000 gal.; tstg. 1,366 ft.

Texas Co.'s No. 22-B Noel, Sec. 14-21-15. Set 6⅝-in. csg. 1,544 ft.

Tiger O. & G. Co.'s No. 1 Crystal fee, Sec. 24-21-16. Drlg. 928 ft.

Sloan Wells' No. 1 Stiles, 3,734 ft. N 1,706 ft. E. SW cor. Sec. 32-21-16. Set 10-in. csg. 340 ft.; cor. T.D. 1,073 ft.; set 6⅝-in. csg. 1,070 ft.; S.D.

G. Whitley's No. 1 Wall, Sec. 12-20-16. Set 10-in. csg. 40 ft.; set 7-in. csg. 1,391 ft.; T.D. 1,544 ft.; acd.

Ivan W. Wright's No. 1 Moore, Sec. 1-20-16. Set 10-in. csg. 40 ft.; T.D. 1,345 ft.; S.D.; will set csg.

Catahoula Parish

Continental Oil Co.'s No. 1 Tensas, C N½ SW SW Sec. 12-9-7e. Set 10¾-in. csg. 1,120 ft.; drlg. sh. 4,950 ft.

Claiborne Parish

Ohio Oil Co.'s No. 15 G. W. Taylor Acct. 1, 100 ft. S and W, C SE Sec. 15-23-8. M.I.M.

L. E. Ozley's No. 1 fee, 1,220 ft. N, 300 ft. W, SE cor. Sec. 32-20-5. Drlg. L.& sh. 5,326 ft.

Tiki Expl. Co.'s No. 1 J. L. Moss, NE SE Sec. 11-22-8. Set 10¾-in. csg. 735 ft.; drlg. sh. 5,532 ft.

De Soto Parish

Foster & Smith's No. 1 McRae, 800 ft. S, 550 ft. W, C Sec. 5-12-16. Set 10-in. csg. 60 ft.; W.O.C.

Dewey Juan's No. 1 Frost Lbr. Ind., 600 ft. SE cor. SW¼ Sec. 14-22-3e. T. D. 2,949 ft.; bailed down 2,300 ft.; S. S.O.; tstd. S.S.O.&S.W.; cd. to 2,938 ft. (cor.) and S.D. 3,255 ft.

Watts O. & G. Co.'s No. 1 Frank Gro. Co., 338 ft. S, 450 ft. W, NE cor. NW Sec. 35-12-11. Br. sd. 2,503-2,634 ft.; set 6-in. csg. 2,503 ft.; T.D. 2,634 ft.; ran lnr.; bttm. 320 ft.; perf.

Grant Parish

R. D. Bevil, Jr.'s No. 1 Swope est., 150 ft. N, 270 ft. W, SE cor. NE SE Sec. 18-9n-1e. Set 10-in. csg. 62 ft.; set 5-in. csg. 1,592 ft.; W.O.C.

J. E. Granstaff's No. 2 Morrison, 2,100 ft. S, 400 ft. W, NE cor. NW SW Sec. 10-9n-1e. Set 10-in. csg. 41 ft.; drlg. sdy. sh. 1,520 ft.

John Pundt's No. 1 Reed est., 805 ft. S, 429 ft. W, NE cor. NW SW Sec. 10-7n-3w. Set 16-in. csg. 182 ft.; T.D. 1,447 ft.; reported S.G. 1,250-80 ft. and S.D. 1,280-1,300 ft.

La Salle Parish

H. L. Hunt and Ark. Fuel Oil Co.'s No. 1 Goodpine Lbr. Co., C NW NW Sec. 18-10n-3e. T.D. 8,997 ft.; P.B. 4,863 ft.; set 5½-in. csg.; perf. 2,399-2,402 ft.; tstd. 8 B.P.H.; 27/64-in. ck.; 15% wtr.; flwd. 15 B.P.H. 99% wtr.; sqzd. and reperf. 2,388-90 ft.; tstd. wtr.; sqzd. and perf. 2,392-95 ft.; tstd. est. 3,000,000 cu. ft. gas; R.P. 900 lb.; ¼-in. ck.; killed and plgd. off perf. and perf. 2,240-46 ft. and 2,273-82 ft.; sqzd. and W.O.C.

E. F. Neely's No. 1 Lizendy, 330 ft. NW cor. NE NE Sec. 19-10-3. Set 10-in. csg. 135 ft.

Placid Oil Co.'s No. 10 La. Cent. Lbr. Co., C NW SW Sec. 7-10n-3e. Took side-wall cores 3,880 ft.; set csg. 2,650 ft.; perf. 2,205-16 ft.; tstd. 1,500 B.F. P.D., 50% S.W.; open tbg.; sqzd. and perf. 2,200-05 ft. and 2,225-40 ft.; sqzd. and W.O.C.

Placid Oil Co.'s No. 11 La. Cent. Lbr. Co., C SE NE Sec. 13-10-2e. T.D. 2,100 ft.; perf. 2,222-32 ft. and tstd. 3,000,000 cu. ft. gas; ¼-in. ck.; R.P. 1,050 lb.; killing to reperf.

Fred Stovall, Tr.'s No. 1 Russell, 200 ft. NW cor. SE SE Sec. 25-10-1e. Loc.

Morehouse Parish

Southern Carbon Co.'s No. 29 Tensas, Sec. 34-22-4. Set 6-in. csg. 2,126 ft.; W.O.C. 2,200 ft.

Natchitoches Parish

J. E. Watts' No. 1 Tanner est., 330 ft. SW cor. NW¼ Sec. 18-10-10. Set 10-in. csg. 60 ft.; W.O.C.

Red River Parish

J. E. Parham's No. 1 Haynes, 2,192 ft. N, 1,000 ft. E, SW cor. Sec. 20-13-10. R.U.

Sabine Parish

P. C. Alexander's No. 1 Paters, 327 ft. N, 346 ft. W, SE cor. SE NW SE Sec. 30-8-12. R.U.

A. R. Chestnut's No. 1 Logan, 330 ft. SW cor. NW NW Sec. 26-10-13. Set 7-in. csg. 1,885 ft.

Odell Henson's No. 1 Frost Lbr. Ind., 660 ft. SE cor. Sec. 22-9-13. Reported S.O. 3,146-48 ft.; set 6-in. csg. 3,115 ft.; tstd. S.O. and S.W. 3,148 ft.; dpnd. and tstd. S.O. and S.W. 3,196 ft.; T.D. 3,228 ft.; acd. 3,000 gal.; flwd. 225 bbl. in 16 hrs.; ¼-in. ck.; T.P. 375 lb.; C. P. 650 lb.; S.W. broke in and well went dead; W.O.

Geo. L. Pace's No. 4 Logan Oil Co., 390 ft. S, 300 ft. E, NW cor. SW Sec. 26-10-13. Set 7-in. csg. 1,981 ft.; perf. 1,922-63 ft.; W.O.S.R.

Union Parish

Memphis Nat. Gas Co.'s No. 7 Tensas, Sec. 2-21-3. Set 12½-in. csg. 158 ft.; set 8-in. csg. 789 ft.; drlg. 2,016 ft.

Webster Parish

Hassie Hunt's No. 1 Cox (formerly Woodley Pet. Co.), 460 ft. N, 660 ft. E, C Sec. 22-21-10. O.W.W.O.; O.T.D. 4,676 ft.; Hillwy. sd. 5,720-36 ft. (oil); set 5-in. csg. 5,855 ft.; W.O.C. 5,925 ft.

Hunt Oil Co.'s No. 1 Robt. Scott, C SE SE Sec. 19-21-9. Set 9⅝-in. csg. 5,604 ft.; drlg. sh. 5,934 ft.

Midstates Oil Corp.'s No. 1 Brenner-Beamsley unit, 100 ft. SE cor. SW SE Sec. 20-21-10. Set 9⅝-in. csg. 5,617 ft.; drlg. sdy. sh. 7,114 ft.

West Carroll Parish

Hunter Co.'s No. 1 E. Lee unit, 1,980 ft. W, 660 ft. S, NE cor. Sec. 27-20-10. R.U.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co.'s No. 1 Boudoin, Sec. 64-12s-3e. 13⅜-in. csg. 1,776 ft.; drlg. sh. 10,228 ft.

Anse La Butte—St. Martin Parish

Glassell & Glassell's No. 1 Morest, Sec. 121-9s-5e. T. salt 5,825 ft.; T.D. 5,839 ft.; 6-in. csg. 4,835 ft.; perf. csg. 4,675-4,715 ft.; tstg.

Bancroft—Beauregard Parish

Republic Prod. Co.'s No. 17 Columbia Ld. & Tmbr. Co., Sec. 16-6s-13w. T.D. 7,870 ft.; abd.

Barataria—Jefferson Parish

California Oil Co.'s No. 1 Danciger-State, Sec. 2-16s-23e. Loc.

California Oil Co.'s No. 1 State-Bayou Twp. 16-23e. 10¾-in. csg. 2,002 ft.; T.D. 8,283 ft.; 7-in. csg. 8,278 ft.; perf. csg. 8,197-8,216 ft.; tstg.

California Oil Co.'s No. 1 Zeringue-Community, Sec. 2-16s-23e. T.D. 8,275 ft., S.W. sd.; T. sd. 8,250 ft.; sdtrkd. 4,403 ft.; T.D. 8,329 ft.; perf. csg. 8,271-79 ft.; rec. oil and S.W.; retstg.

Carter, Perrin & Brian's No. 1 Ruttle-Wiseman, Sec. 2-16s-23e. T.D. 9,790 ft. 7-in. csg. 8,891 ft.; perf. csg.; tstg.

Geo. Conover's No. 1 Conover Community, Sec. 22-15s-23e. Loc.

Fohs Oil Co.'s No. 1 Conzelman, Sec. 22-15s-23e. Loc.

Bateman Lake—St. Mary Parish

Texas Co.'s No. 3 Wax Bayou, Sec. 21-16s-12e. 7-in. csg. 10,984 ft.; T.D. 11,127 ft.; rec. 275 ft. of oil 10,879-10,900 ft.; D.S. stk.; fsg.

Baton Rouge—East Baton Rouge Parish

Guaranty Oil Co.'s No. 2 Morgan, Sec 65-7s-1w. Sdtrkd.; T.D. 6,536 ft.

Wm. Helis' No. 5-B Duplantier, Sec. 70-7s-1w. Drlg. sdy. sh. 1,726 ft.

Wm. Helis' No. 9 Nelson, Sec. 36-7s-1w. Loc.

Bayou Blue—Iberville Parish

T. G. Markley and Crosby Drlg. Co.'s No. 1 Baiste, Sec. 74-9s-10e. Spd.

Superior Oil Co.'s No. 1 E. B. Schwing, Sec. 73-9s-10e. Drlg. sh. 4,187 ft.

Superior Oil Co.'s No. 3 Schwing Lbr. Co., Sec. 74-9s-10e. Loc.

Bayou Choctaw—Iberville Parish

Standard Oil Co. of La.'s No. 2 Cypress, Sec. 28-8s-11e. 10¾-in. csg. 2,250 ft.; T.D. 8,609 ft.; fsg.

Bayou des Glaise—Iberville Parish

Humble O. & R. Co.'s No. 2-B Wilberta, Sec. 78-8s-8e. 10¾-in. csg. 2,854 ft.; drlg. sh. 8,730 ft.

Bayou Mallett—Arcadia Parish

Superior Oil Co.'s No. 2 Savoy, Sec. 47-7s-1e. Abd. loc.

Bayou Pigeon—Iberia Parish

Plymouth Oil Co.'s No. 1 Leblanc, Sec. 13-12s-10e. Loc.

Caillou Island—Terrebonne Parish

Texas Co.'s No. 66 State, Sec. 17-23s-20e. Drlg. sh. 5,666 ft.

Cameron Meadows—Cameron Parish

Magnolia Pet. Co.'s No. 28 Cameron Meadows, Sec. 21-14s-13w. Loc.

Chacahoula—La Fourche Parish

Sun Oil Co.'s No. 2 Cypress, Sec. 75-15s-15e. R.U.

Sun Oil Co.'s No. 8 Dibert, Stark & Brown Cypress Co., Sec. 70-15s-15e. 10¾-in. csg. 1,831 ft.; drlg. 2,967 ft.

Chalkley Field—Cameron Parish

Humble O. & R. Co.'s No. 7 K. B. Hanzen, Sec. 9-12s-6w. P.B. 8,637 ft.; perf. csg. 8,600-10 ft.

Shell Oil Co., Inc.'s No. 1 Coastal Club. T.D. 9,400 ft.; fsg.

Shell Oil Co., Inc.'s No. 7-A Hanzen, Sec. 20-12s-6w. R.U.

Shell Oil Co., Inc.'s No. 1 Sweet Lake. T.D. 8,956 ft.; run 5-in. csg.; tstg.

Cheneyville—Rapides Parish

Amerada Pet. Corp.'s No. 8, Sec. 53-1s-2e. T.D. 5,800 ft.; perf. csg. 5,634-64 ft. I.P. 344 B.P.D.; ¼-in. ck.

S. W. Richardson's No. 1 Beasley, Sec. 55-1s-2e. T.D. 5,867 ft.; abd.

S. W. Richardson's No. 11 Well Co., Inc., Sec. 53-1s-2e. T.D. 5,695 ft.; 5½-in. csg. 5,761 ft.

Darrow—Ascension Parish

Humble O. & R. Co.'s No. 3-B Community, Sec. 47-10s-2e. Drlg. sh. 9,076 ft.

Humble O. & R. Co.'s No. 29 Community, Sec. 30-10s-2e. Loc.

Kiva Oil Co.'s No. 1 Duplessis, Sec. 69-10s-2w. S.D. 2,523 ft.

Dog Lake—Terrebonne Parish

Texas Co.'s No. 11 State, Sec. 32-21s-16e 10¾-in. csg. 1,751 ft.; S.D. 7,173 ft.

Texas Co.'s No. 24 State, Sec. 5-22s-16e. Loc.

Edgerly—Calcasieu Parish

Emerson Oil Corp.'s No. 3 Stanolind fee Sec. 28-9s-11w. Sdtrkd.; T.D. 3,680 ft.; 5½-in. csg. 3,665 ft.

Eola—Avoyelles Parish

Amerada Pet. Corp.'s No. 3 Avoyelles Sec. 5-2s-3e. R.U.

Amerada Pet. Corp.'s No. 1 Sam Cerami Sec. 6-2s-3e. Drlg. sh. 4,800 ft. in side-tracked hole.

Amerada Pet. Corp.'s No. 2 Cerami, Sec. 6-2s-3e. T.D. 8,570 ft.; 5½-in. csg. 8,569 ft.; I.P. 428 B.P.D.; ¼-in. ck.

Amerada Pet. Corp.'s No. 3 Irion, Sec. 6-2s-3e. R.U.

Amerada Pet. Corp.'s No. 1 Knoll, Sec. 6-2s-3e. T.D. 8,570 ft.; perf. csg. 8,510-68 ft.; I.P. 569 B.P.D.; ¼-in. ck.

Amerada Pet. Corp.'s No. 1 R. Tubre, Sec. 31-1s-3e. Loc.

Hany Bass & Lake's No. 1 Ritchie Grocery, Sec. 3-1s-3e. Drlg. sh.&L. 7,300 ft.

Gulf Oil Corp.'s No. 2 Moulliere, Sec. 1-2s-2e. T.D. 8,570 ft.; 5½-in. csg. 8,571 ft.; I.P. 649 B.P.D.; ¼-in. ck.

G. R. Kenedy's No. 1 Josie Hudson, Sec. 1-2s-2e. Drlg. sh. 8,474 ft.

Magnolia Pet. Co.'s No. 1 O. Q. Foster, Sec. 6-2s-3e. T.D. 8,570 ft.; I.P. 240 bbl. in 9 hrs.; ¼-in. ck.

S. W. Richardson's No. 11 Haas Inv. Co., Sec. 7-2s-3e. T.D. 8,591 ft.; 5½-in. csg. 8,589 ft.; comp.; no ga.

Fausse Point—Iberia Parish

Sun Oil Co.'s No. 2 Planters Lbr. Co., Sec. 27-11s-8e. R.U.

Texas Co.'s No. 7 State, Sec. 35-11s-8e. Drlg. sh.&L. 6,634 ft.

Garden Island—Plaquemines Parish

Texas Co.'s No. 43 State, Sec. 38-23s-33e. T.D. 5,311 ft.; 7-in. csg. 5,091 ft.

Texas Co.'s No. 44 State, Sec. 49-23s-33e. Drlg. 216 ft.

Gibson—Terrebonne Parish

Shell Oil Co., Inc.'s No. 8 Pelican, Sec. 35-17s-15e. T.D. 10,449 ft.; P.B. 10,371 ft.; perf. csg. 10,346-58 ft.

Gillis—Calcasieu Parish

Fohs Oil Co.'s No. 2-A M. P. Erwin, Sec. 14-9s-8w. T.D. 6,309 ft.; sdtrkd.; drlg. sdy. sh. 6,512 ft.

Union Sulphur Co.'s No. 9 Kaufman, Sec. 7-9s-7w. R.U.

Union Sulphur Co.'s No. 3 McIver, Sec. 14-9s-8w. Loc.

Golden Meadow—La Fourche Parish

Bateman Drlg. Co.'s No. 1 Harry Louviere, Sec. 9-19s-22e. T.D. 5,560 ft.; 5½-in. csg. 5,260 ft.; perf. csg. 5,150-80 ft.; S.D.

Bennett O. & R. Co.'s No. 3 Authement, Sec. 12-19s-22e. T.D. 8,625 ft.; run 7-in. csg.

Bennett O. & R. Co.'s No. 1 Guilbeau, Sec. 2-19s-22e. Drk.

Bennett O. & R. Co.'s No. 3 Lafont, Sec. 2-19s-22e. T.D. 5,300 ft.; 7-in. csg. 5,303 ft.

Bennett O. & R. Co.'s No. 4 Leo Lafont, Sec. 2-19s-22e. Drk.

Bennett O. & R. Co.'s No. 5 Leo Lafont, Sec. 2-19s-22e. Drlg. sh. 2,218 ft.

Bennett O. & R. Co.'s No. 1 Noel Cochenee, Sec. 2-19s-22e. T.D. 2,668 ft.; 7-in. csg. 2,668 ft.

Brown & Woods' No. 1 Guilbeau, Sec. 2-19s-22e. R.U.

Brown & Woods' No. 1 S. Hogan, Sec. 9-19s-22e. T.D. 2,710 ft.; P.B. to 1,500 ft.; sdtrkd.; T.D. 2,672 ft.; 7-in. csg. on bttm.; perf. csg. 2,650-65 ft.; would not flow; S.D.; T.A.

Brown & Woods' No. 1 State-Bayou, Sec. 9-19s-22e. Drk.

M. H. Marr et al's No. 1 Alario Community, Sec. 2-19s-22e. Drlg. 2,300 ft.

M. H. Marr et al's No. 2 B. & D. unit, Sec. 17-19s-22e. Road comp.

M. H. Marr et al's No. 3 B.&D. unit, Sec. 12-19s-22e. Loc.

M. H. Marr et al's No. 3 Terrebonne, Sec. 9-19s-22e. Drlg. sdy. sh. 4,525 ft.

Martex Oil Corp.'s No. 1-D Rebstock, Sec. 2-19s-22e. 10¾-in. csg. 723 ft.; T. D. 5,187 ft.; run 7-in. csg.

Martex Oil Co.'s No. 3-A Rebstock, Sec. 2-19s-22e. T.D. 2,665 ft.; 5-in. csg. 2,665 ft.; perf. csg. 2,630-62 ft.; S.I. and S.D.

Geo. O'Dwyer et al's No. 1 La Fourche, Sec. 21-19s-22e. T.D. 5,489 ft.; 5½-in. csg. 5,489 ft.

S. Rhodes' No. 1 Nickerson, Sec. 12-9s-8w. Drlg. sh. 5,520 ft.

Terouche Oil Co.'s No. 2 Cheramie, Sec. 12-19s-22e. Drk.

Texas Co.'s No. 12 Falgout Holding Co., Sec. 9-19s-22e. T.D. 5,175 ft.; 7-in. csg. 5,158 ft.; I.P. 324 B.P.D.; ¼-in. ck.

Texas Co.'s No. 12 Golden Meadow, Sec. 78-19s-21e. Drlg. sh. 3,963 ft.

Texas Co.'s No. 5 La Terre, Sec. 2-20s-21e. Loc.

Texas Co.'s No. 6 Le Terre, Sec. 1-20s-21e. Loc.

Texas Co.'s No. 7 State-Catfish, Sec. 2-20s-21e. Loc.

Grand Bay—Plaquemines Parish

Gulf Oil Corp.'s No. 7-A Grand Prairie Lv. Dist., Sec. 5-20s-19e. Loc.

Gulf Oil Corp.'s No. 8-A Grand Prairie Dist., Sec. 5-20s-19e. Loc.

Gulf Ref. Co.'s No. 9-A Grand Prairie Lv. dist., Sec. 31-19s-19e. Loc.

Gulf Oil Corp.'s No. 4 State QQ, Sec. 5-20s-19e. T.D. 8,770 ft.; 7-in. csg. 8,770 ft.; perf. csg. 8,758-68 ft.; I.P. 307 B. P.D.; ¼-in. ck.

Gulf Oil Corp.'s No. 5 State QQ, Sec. 31-19s-19e. Loc.

Texas Co.'s No. 1 State-Lookout Pass, Sec. 48-20s-18e. T.D. 10,206 ft.

Texas Co.'s No. 3 State-Lookout Pass, Sec. 6-20s-19e. Loc.

Grand Lake—Cameron Parish

Amerada Pet. Corp.'s No. 4 State, Twp. 13s-4w. T.D. 9,000 ft.; 5½-in. csg. 9,000 ft.; perf. csg. 8,360-96 ft.; I.P. 202 bbl. in 23 hrs.; ¼-in. ck.

Amerada Pet. Corp.'s No. 8 State, Twp. 13s-4w. Drive piling.

Superior Oil Co.'s No. 11 State, Twp. 13s-4w. Drlg. sh. 6,720 ft.

Hackberry—Cameron Parish

Gulf Ref. Co.'s No. 15 Erwin, Sec. 12-12s-10w. Cg. sdy. L. 6,536 ft.

Hanson & Abercrombie's No. 2 Verdin, Sec. 36-12s-10w. Drlg. sh. 4,212 ft.

Stanolind O. & G. Co.'s No. 22 Cameron Parish, Sec. 16-12s-10w. Loc.

Stanolind O. & G. Co.'s No. 31 Gulf Ld., Sec. 25-12s-11w. Drlg. sh. 1,712 ft.

Superior Oil Co.'s No. 10 Vincent, Sec. 30-12s-10w. Drlg. 220 ft.

Happytown—Iberville Parish

Shell Oil Co., Inc.'s No. 1 Schwing Lbr. & Shingle Co., Sec. 85-7s-8e. Cg. sh. 9,696 ft.

Horseshoe Bayou—St. Mary Parish

Texas Co.'s No. 4 State, Sec. 23-17s-9e. Drlg. sh.&sd. 11,102 ft.

Jeanerette—St. Mary Parish

Herton Oil Co.'s No. 10 Banta, Sec. 40-13s-9e. Drlg. sd.&sh. 686 ft.

Jefferson Island—Iberia Parish

Texas Co.'s No. 5 Jefferson Island, Sec. 58-12s-5e. Drlg. sd.&gvl. 556 ft.
Texas Co.'s No. 3 State. Twp. 12s-5e. T.D. 7,749 ft.; P.B. 6,000 ft.

Jennings—Acadia Parish

Glassell-Glassell's No. 8 McFarlain, Sec. 41-9s-2w. Drlg. sh. 5,020 ft.
Gulf Oil Corp.'s No. 42 Arnaudet, Sec. 47-9s-2w. 7-in. csg. 7,961 ft.; T.D. 8,011 ft.; perf. csg.; I.P. 500 B.P.D.; ⅞-in. ck.
Shell Oil Co., Inc.'s No. 10 Community, Sec. 40. T.D. 7,773 ft.; I.P. 230 B.P.D.; various cks.; perf. csg. 7,602-23 ft. and 7,642-82 ft.
Stanolind O. & G. Co.'s No. 117 Crowley O. & Min. Co., Sec. 48-9s-2w. Drlg. sdy. sh. 7,526 ft.
Stricker-Pharis et al's No. 1 Gulf fee, Sec. 45-9s-2w. 16-in. csg. 60 ft.; S.D. 7,503 ft.

Lafitte—Jefferson Parish

Texas Co.'s No. 15 Lafitte, Sec. 20-17s-24e. T.D. 10,135 ft.; 7-in. csg. 10,123 ft.; perf. csg. 9,475-9,505 ft.; rec. S.W.; perf. csg. 6,515-35 ft.; rec. S.W.; perf. csg. 4,830-33 ft.; flwd. 352 B.P.D.; sanded up.
Texas Co.'s No. 16 L.L.&E., Lafitte, Sec. 17-17s-24e. Loc.
Texas Co.'s No. 6-A Madison Realty Co., Sec. 17-17s-24e. Dredge canal.
Texas Co.'s No. 13 Rigolet Cooperative Fur Co., Sec. 29-17s-24e. T.D. 10,176 ft. 7-in. csg. 10,177 ft.

La Fourche Crossing—La Fourche Parish

Lisbon-Iberia Oil Co.'s No. 1 Prosper Thibodaux, Sec. 17-15s-17e. Drlg. 3,320 ft.
Mikton Oil Co.'s No. 2 Martinez, Sec. 132-15s-17e. 11¾-in. csg. 2,687 ft.; T.D. 4,904 ft.; P.B. 4,700 ft.; T.D. 10,998 ft.; 5½-in. csg. 10,042 ft.; perf. csg. 10,108-20 ft.; I.P. 292 B.P.D.; 11/64-in. ck.; T.P. 1,000 lb.

Lake Mongoulois—St. Martin Parish

Texas Co.'s No. 8 State, Sec. 10-10s-9e. Drlg. sh. 2,212 ft.

Lake Pelto—Terrebonne Parish

Texas Co.'s No. 30 Lake Pelto, Sec. 7-23s-18e. T.D. 4,559 ft.; 7-in. csg. 4,459 ft.; perf. csg. 4,400-28 ft.; rec. S.W.; sbd.
Texas Co.'s No. 31 State, Sec. 8-23s-18e. Loc.

La Place—St. James Parish

Pan American Prod. Co.'s No. 1 Godchaux Sugars, Sec. 97-11s-7e. 10¾-in. csg. 2,814 ft.; T.D. 9,042 ft.; 7-in. csg. 8,970 ft.; P.B. 8,940 ft.; perf. csg. 8,890-8,900 ft.; flwd. 35 bbl. dist.; 13½ hrs.; btm-hole ck.

Leeville—La Fourche Parish

Texas Co.'s No. 73 Leeville, Sec. 27-21s-22e. Loc.

Neale—Beauregard Parish

Atlantic Ref. Co.'s No. 1 Spiers, Sec. 26-3s-11w. Loc.

New Iberia—Iberia Parish

Acadian Prod. Co.'s No. 4 E. T. Weeks, Sec. 51-12s-7e. Loc.
Wm. Helis' No. 10 Schwing, Sec. 56-12s-7e. Drlg. sh.&L. 8,556 ft.
Texas Co.'s No. 2 Bryant, Sec. 25-12s-7e. R.U.
Texas Co.'s No. 7 Bryant, Sec. 25-12s-7e R.U.
Texas Co.'s No. 17 Duhe, Sec. 26-12s-7e. Drlg. sd.&L. 5,132 ft.
Texas Co.'s No. 2 Hebert, Sec. 25-12s-7e. 10¾-in. csg. 1,935 ft.; T.D. 8,535 ft.; rmg.
Texas Co.'s No. 2 Smith, Sec. 71-12s-7e Cg. sdy. sh. 9,595 ft.

North Crowley—Acadia Parish

Humble O. & R. Co.'s No. 7 Ohlenforst, Sec. 34-8s-1e. Drlg.
Humble O. & R. Co.'s No. 8 Ohlenforst, Sec. 34-8s-1e. T.D. 8,810 ft.; P.B. 8,681 ft.; 7-in. csg. 8,807 ft.
Humble O. & R. Co.'s No. 5 Staken, Sec. 33-8s-1e. R.U.

North Elton—Calcasieu Parish

W. T. Burton's No. 1 Calcasieu Natl. Bnk., Sec. 23-6s-3w. R.U.

Paradis—St. Charles Parish

Jolly Pet. Co.'s No. 1 Matthews Oliveira, Sec. 4-14s-20e. Cg. sh. 10,770 ft.
Texas Co.'s No. 4 L.L.&E. Paradis, Sec. 6-14s-20e. R.U.
Texas Co.'s No. 1 Sunset Realty & Planting Co., Sec. 38-14s-20e. 10¾-in. csg. 2,716 ft.

Plumb Bob—St. Martin Parish

Texas Co.'s No. 13 St. Martin Ld. Co Sec. 21-8s-7e. T. sd. 8,323 ft.; cg. oil sd. 8,326 ft.
Texas Co.'s No. 14 St. Martin, Sec. 21-8s-7e. Loc.

Port Barre—St. Landry Parish

McDannald Oil Co.'s No. 1 Sibille, Sec. 7-6s-6e. Cg. 5,712 ft.
McDannald Oil Co.'s No. 2 Sibille, Sec. 7-6s-6e. Loc.
Pan American Prod. Co.'s No. 6 Garland, Sec. 4-6s-5e. Drlg. sh. 226 ft.
Y. D. Spill's No. 1 Gaudet, Sec. 4-6s-5e S.D. 4,700 ft.
Texas Co.'s No. 28 Botney Bay, Sec. 4-6s-5e. Loc.
Westgate-Greenland Oil Co.'s No. 1 Jeansenne, Sec. 20-6s-5e. 7-in. csg. 5,286 ft.; perf. csg.; T.D. 5,314 ft.; S.D.

Potash—Plaquemines Parish

Humble O. & R. Co.'s No. 43 Orleans Lv Bd., Sec. 14-18s-15e. Drlg. sh. 3,526 ft.

Quarantine Bay—Plaquemines Parish

Gulf Oil Corp.'s No. 6-A Orleans Lv. Bd., Sec. 7-19s-17e. Drlg. sh. 5,636 ft.
Gulf Oil Corp.'s No. 16 State, Sec. 7-19s-17e. 13⅜-in. csg. 1,598 ft.; T.D. 8,550 ft.; 7-in. csg. 8,496 ft.
Gulf Ref. Co.'s No. 17 State, Twp. 19s-17e. Loc.
Gulf Ref. Co.'s No. 18 State, Twp. 19s-17e. Loc.

Raceland—La Fourche Parish

Amerada Pet. Corp.'s No. 5 South Coast Corp., Sec. 34-15s-19e. Drlg. sh.&sd. 10,189 ft.

Sorrento—Ascension Parish

Sorrento Synd.'s No. 2 L. L. Bernard, Sec. 22-10s-4e. R.U.

South Jennings—Jeff Davis Parish

W. H. Collins' No. 1 Richard, Sec. 22-10s-3w. Drk.
Stanolind O. & G. Co.'s No. 1 W. H. Adams, Sec. 14-10s-3w. Loc.
Stanolind O. & G. Co.'s No. 1 E. K. Atwell, Sec. 14-10s-3w. Loc.
Stanolind O. & G. Co.'s No. 1 Clare E. Landry and A. A. Hebert. T.D. 9,638 ft.; 5½-in. csg. 9,487 ft.; perf. csg. 8,895-8,905 ft.; fag. for tbg.
Stanolind O. & G. Co.'s No. 1 Morgan, Sec. 15-10s-3w. T.D. 9,575 ft.; 5½-in. csg. 9,178 ft.; perf. csg. 9,508-18 ft.; I.P. 75 bbl. dist., 11½ hrs.; ¼-in. ck.
Stanolind O. & G. Co.'s No. 1 L. Remage, Sec. 9-10s-3w. Drlg. sh.&L. 10,227 ft.

South Roanoke—Jeff Davis Parish

Continental Oil Co.'s No. 2 Fay, Sec. 31-10s-3w. Drlg. 800 ft.
Continental Oil Co.'s No. 4 Sturdevant Sec. 35-10s-4w. Drlg. sh.&sdy. L. 8,452 ft.

Starks—Calcasieu Parish

W. T. Burton & McLean's No. 2 Industrial Lbr. Co., Sec. 29-9s-12w. Drlg. sh. &L. 4,677 ft.
W. T. Burton Oil Co.'s No. 1 Lutcher Moore Lbr. Co., Sec. 30-9s-12w. Cg. sd. 4,040 ft.

Sweet Lake—Cameron Parish

Pure Oil Co.'s No. 16 Stanolind O. & G Co., Sec. 12-13s-8w. Drlg. sdy. sh. 5,020 ft.

Venice—Plaquemines Parish

Tide Water Asso. Oil Co.'s No. 7 Buras Lv. Bd., Sec. 22-21s-30e. 16-in. csg 205 ft.; T.D. 10,765 ft.; run 7-in. csg.
Tide Water Asso. Oil Co.'s No. 1 C. L. Johnson, Sec. 35-21s-30e. Loc.
Tide Water Asso. Oil Co.'s No. 12 Manhattan Ld. Co., Sec. 35-21s-30e. Loc.

Vermilion Bay—Iberia Parish

Texas Co.'s No. 4-B Vermilion Bay, Twp. 16s-15e. 11¾-in. csg. 4,454 ft.; T. salt 5,855 ft.; base salt 7,435 ft.; stk. csg. pulling.

Villa Platte—Evangeline Parish

Continental Oil Co.'s No. 3 Corell, Sec 36-3s-2e. Drlg. sh. 10,190 ft.
Continental Oil Co.'s No. 6 Deville, Sec 3-4s-2e. Drlg. sh. 7,512 ft.
Continental Oil Co.'s No. 6 Haas, Sec. 44 3s-2e. Drlg. sh. 8,915 ft.
Continental Oil Co.'s No. 3 La Central Sec. 46-3s-2e. Drlg. sh. 9,026 ft.
Continental Oil Co.'s No. 1 Opelousas, St. Landry, Sec. 44-3s-2e. Drlg. sh. 8,617 ft.
Continental Oil Co.'s No. 1 Adam Tate Sec. 41-4s-2e. Drlg. sh. 10,054 ft.
Continental Oil Co.'s No. 1 J. E. Vidrine Sec. 1-4s-2e. Drlg. sh. 9,834 ft.
Danciger O. & R. Co.'s No. 2 J. E. Vidrine, Sec. 1-4s-2e. Drlg. sh. 10,138 ft.
J. K. Hughes' No. 2 Ortego, Sec. 36-3s-2e. Drlg. sh. 7,410 ft.

West Cote Blanche—St. Mary Parish

Texas Co.'s No. 2 State, West Cote Blanche, Twp. 16s-6e. Loc.
Texas Co.'s No. 3 State, West Cote Blanche, Twp. 16s-6e. Loc.

West Gueydan—Vermilion Parish

Magnolia Pet. Co.'s No. 1 J. Hartwell Sec. 5-12s-2w. T.D. 7,180 ft.; 7-in. csg. 7,180 ft.; perf. csg. 7,146-50 ft.; flwd. S.W.; retstg.

West Lake Verret—St. Mary Parish

Shell Oil Co., Inc.'s No. 4 Jeanerette 7⅝-in. csg. 10,683 ft.; T.D. 11,890 ft.; P.B. 11,371 ft.; flwg. into tanks; no ga.; perf. csg. 11,326-31 ft.; flwd. 35 bbl. dist. and 2 bbl. S.W.; 10/64-in. ck.

White Castle—Iberville Parish

Jolly Pet. Corp.'s No. 1 E. B. Adams, Sec. 1-11s-12e. Drlg. sdy. sh. 8,685 ft.
Shell Oil Co., Inc.'s No. 16 Wilbert, Sec 8-11s-12e. Drlg. sd. 774 ft.

Woodlawn—Jeff Davis Parish

Union Sulphur Co.'s No. 2 Johnson, Sec. 12-9s-6w. Drlg. sh. 4,560 ft.
Union Sulphur Co.'s No. 1 T. Miller, Sec. 6-9s-5w. Loc.

S. LOUISIANA WILDCATS

Acadia Parish

Continental Oil Co.'s No. 1 W. B. Vincent, Sec. 26-7s-2w. Drlg. sh. 7,026 ft.
Humble O. & R. Co.'s No. 1 Leger, Sec. 83-8s-2e. Drlg. sd. 9,078 ft.

Assumption Parish

Falcon-Seaboard Drlg. Co.'s No. 1 Alex Simoneaux, Sec. 43-12s-13e. 18⅝-in csg. 60 ft.; cg. salt 6,309 ft.; T. salt 6,160 ft.
Shell Oil Co., Inc.'s No. 1 A. L. Patereau, Unit 1, Sec. 66-16s-14e. Bldg. road.

Beauregard Parish

Atlantic Ref. Co.'s No. 1 Lutcher Moore, Sec. 22-3s-11w. Loc.
Atlantic Ref. Co.'s No. 1 Rice Ld. & Lbr. Co., Sec. 22-3s-11w. Loc.
Loffland Bros.' No. 3 Long Bell Lbr Co., Sec. 24-5s-11w. Drlg. sh. 8,446 ft.

Cameron Parish

Phillips Pet. Co.'s No. 1 Miami Corp., Sec. 11-4s-6w. T.D. 10,195 ft.; well tried to blow out: stk. D.S.; sdtrkd. 3-775 ft.; T.D. 5,378 ft.; sdtrkd.; rng. 9⅝-in. csg.
Superior Oil Co.'s No. 2 State, Twp. 14s-9w. R.U.

East Baton Rouge Parish

Farris & Golding Drlg. Co.'s No. 1 Paulet. Sec. 58-8s-1e. 10¾-in. csg. 1,780 ft drlg. sh. 3,477 ft.

Iberville Parish

Shell Oil Co., Inc.'s No. 1 Southwood, Sec. 20-9s-2e. Cg. 8,771 ft.

Jeff Davis Parish

Continental Oil Co.'s No. 1 Niblett, Sec. 1-11s-5w. 13⅜-in. csg. 2,085 ft.; 7-in. csg. 10,955 ft.; T.D. 11,748 ft.; 5½-in. csg. 11,747 ft.; perf. csg. 11,604-24 ft.; flwg. 80 to 100 B.F.P.D.; ¼-in. ck., 8 to 20% S.W.; T.P. 2,500 lb.; tstg.
H. M. Naylor's No. 1 Acadia Dev. Co., Sec. 12-10s-2w. T.D. 2,190 ft.; 10¾-in. csg. 2,115 ft.; drlg. sh. 8,537 ft.
Union Sulphur Co.'s No. 1 Somson, Sec. 35-7s-4w. Drlg. sh. 9,396 ft.

Jefferson Parish

Vendome Pet. Co.'s No. 1 Coulon, Sec. 15-15s-23e. Drlg. sh. 5,420 ft.

La Fourche Parish

Ernest Cockrell's No. 1 La Fourche Ld. Co., Sec. 32-18s-22e. 10¾-in. csg. 650 ft.; T.D. 2,900 ft.
Gulf Oil Corp.'s No. 1-B Bowie Lbr. Co., Sec. 69-15s-19e. Drlg. sh. 10,362 ft.
Humble O. & R. Co.'s No. 1 Caldwell Sugars, Inc., Sec. 115-14s-15e. 13⅜-in. csg. 2,988 ft.; T.D. 10,875 ft.; P.B. 10,875 ft.; to sdtrk.

Livingston Parish

Roderick Tower, Inc.'s No. 1 James Pirie, Sec. 41-7s-3e. Drlg. sh. 9,015 ft.

Plaquemines Parish

Gulf Oil Corp.'s No. 1-E Buras Lv. dist., Sec. 1-23s-10e. Drlg. sdy. sh. 4,612 ft.
California Co.'s No. 1 Delta Minerals, Sec. 2-15s-24e. 13⅜-in. csg. 2,028 ft.; T.D. 10,246 ft.; 7-in. csg. 10,188 ft.; perf. csg. 9,963-74 ft.; flwd. 22 B.O. on D.S.T.

Rapides Parish

Gulf States' No. 1 Long Bell Lbr. Co., Sec. 46-4n-3w. R.U.
R. L. Wheelock et al's No. 1 H. V. Rushing, Sec. 1-2n-1s. Loc.

St. Bernard Parish

Gulf Ref. Co.'s No. 4 State-R.R. (Lake Borgne), Twp. 12s-15e. 9⅝-in. csg. 8,161 ft.; T.D. 12,019 ft.; fag.

St. Charles Parish

R. H. Parker et al's No. 1 C. L. Thompson, Sec. 87-13s-20e. 10¾-in. csg. 2,599 ft.; T.D. 10,235 ft.; P.B. to sdtrk.

St. James Parish

St. James Oil Co.'s No. 1 Celstine Plant, Sec. 74-11s-4e. R.U.

St. Landry Parish

S. A. Thompson's No. 1 Wm. Murphy, Sec. 22-5s-6e. Loc.

St. Mary Parish

Joe Domingue's No. 1 Allain, Sec. 46-13s-9e. S.D. 1,510 ft.
Sun Oil Co.'s No. 1 Belle Isle, Sec. 6-18s-11e. Loc.

Terrebonne Parish

Barnsdall Oil Co.'s No. 1 Nelson, Sec. 2-21s-11e. 10¾-in. csg. 2,767 ft.; 8⅝-in. csg. 10,505 ft.; drlg. sh. 11,680 ft.
Stanolind O. & G. Co.'s No. 1 State (Bay Junop), Sec. 35-21s-14e. Loc.

Vermilion Parish

La. Ld. & Expltn. Co.'s No. 1 Walter White hrs., Sec. 17-15s-1e. 13⅜-in. csg. 2,800 ft.; drlg. sh. 8,330 ft.
Texas Co.'s No. 1 Vermilion Par. Sch. Bd., Sec. 16-13s-4e. T.D. 9,923 ft.; 7⅝-in. csg. 9,918 ft.; T.D. 10,595 ft.; P.B. 10,250 ft.; sdtrkd. 10,300 ft.; cd. S.W. sd. 10,659-79 ft.; T.D. 11,762 ft.; perf.

Once you've tried it — you will never be satisfied with any other. No other power will do your work so satisfactorily — so safely — in freezing weather or terrific heat.

There is a WISCONSIN air-cooled engine to power any job—12 sizes—1 to 35 H.P.

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510 ATLAS BLDG., TULSA, OKLA.
M & M BLDG., HOUSTON, TEXAS

Wisconsin Motor Corporation
MILWAUKEE, WISCONSIN, U.S.A.

csg. 11,378-88 ft.; flwd. 121 B.F.P.D.; 13/64-in. ck.; 16% S.W.; killed; reperf. csg.

G. H. Vaughn's No. 1 Avery Boullion, Sec. 49-13s-4e. T.D. 10,600 ft.; run electrical survey.

TEXAS

Week Ended April 20

GULF COAST FIELDS

Anchor—Brazoria County

Humble O. & R. Co.'s No. 1 Heim & Holland, S. Marsh Sur. Loc.

Humble O. & R. Co.'s No. 1 Mettler. T.D. 4,820 ft.; fsg.

Glenn McCarthy's No. 1 Neidringhaus, J. Bradley Sur. 13⅜-in. csg. 926 ft.; S.D. 11,327 ft.

Glenn McCarthy's No. 1 Kate and Laura Yocum, J. D. Valderas Sur. Drlg. sh. 10,328 ft.

Sun Oil Co.'s No. 1 Morris Stern, Shubal Marsh Sur. 18⅝-in. csg. 128 ft.; drlg. sh.&L. 8,826 ft.

Old Ocean—Brazoria County

Harrison & Abercrombie's No. 8 Armstrong, Polly & Chance Sur. T.D. 10,942 ft.; comp.; no ga.

Harrison & Abercrombie's No. 1 A. F. Wilson, D. McCormick Sur. Drlg. sd.& L. 7,056 ft.

Stanolind O. & G. Co.'s No. 2 Giles, C. Breen Sur. Drlg. sh.&sd. 5,696 ft.

Stanolind O. & G. Co.'s No. 1 Hughes, C. Breen Sur. Drlg. sd.&sh. 10,159 ft.

Sun Oil Co.'s No. 4 Borsodi, C. Breen Sur. 13⅜-in. csg. 1,520 ft.; 9⅝-in. csg. 7,009 ft.; drlg. sh. 8,712 ft.

Sun Oil Co.'s No. 5 McCampbell, C. Breen Sur. Drlg. L. 6,786 ft.

Seabreeze—Chambers County

Sun Oil Co.'s No. 1 Felix Jackson, A. Y. Barbo Sur. 10¾-in. csg. 1,943 ft.; T. sd. 8,512 ft.; T.D. 8,522 ft.; W.O.

Rosenberg—Fort Bend County

Humble O. & R. Co.'s No. 1 R. Kroesche, H.&T.C. Sur. T.D. 8,338 ft.; abd.

Caplen—Galveston County

Sun Oil Co.'s No. 2-26 State, S. F. Hughes Sur. Drlg. sh. 7,381 ft.

Sun Oil Co.'s No. 4 Zinn & Forman, C. A. Hughes Sur. T.D. 7,825 ft.

Leaque City—Galveston County

Phillips Pet. Co.'s No. 7 Lobit, Perry & Austin Sur. Perf. csg. 8,692-95 ft.

Phillips Pet. Co.'s No. 4 Stewart Title Guaranty Co., S. F. Austin Sur. 10¾-in. csg. 3,520 ft.; 7⅝-in. csg. 9,510 ft.; T.D. 11,270 ft.; well blew out; killed: fsg.

Clear Lake—Harris County

Humble O. & R. Co.'s No. 36-C West, Wm. Dobie Sur. T.D. 5,925 ft.

Humble O. & R. Co.'s No. 40-C West, Geo. McKinstry Sur. Drlg. sh. 1,620 ft.

Stanolind O. & G. Co.'s No. 3 Sowden, J. Lindsey Sur. T.D. 5,485 ft.; perf. csg. 5,842-43 ft.

Friendswood—Harris County

Humble O. & R. Co.'s No. 1-C H. Godwin, W. K. Smith Sur. Drlg. sh. 5,969 ft.

Humble O. & R. Co.'s No. 2 Ruby, T. Choate Sur. Drlg. sd. 6,090 ft.

Fannett—Jefferson County

Gulf Oil Corp.'s No. 4 Bordages, J. Probarth Sur. Drlg. sh. 6,020 ft.

North Cheek—Jefferson County

Strake Pet., Inc.'s No. 1 Pipkin, H.T. &B. Sur. 15. T.D. 8,700 ft.; D.S.S.

South China—Jefferson County

Titanic Oil Co.'s No. 3-A Broussard, S. Miles Sur. Loc.

Esperson—Liberty County

General Crude Oil Co.'s No. 20 Davis, A. McNeil Sur. 8⅝-in. csg. 7,181 ft.; drlg. sh. 8,376 ft.

General Crude Oil Co.'s No. 12-B Esperson, A. McNeil Sur. R.U.

Martha—Liberty County

Stanolind O. & G. Co.'s No. 1 Garrow, I.&G.N.R.R. Sur. 7. Drlg. sdy. sh. 9,287 ft.

Wilson Creek—Matagorda County

Barnsdall Oil Co.'s No. 1 Stoddard, G. B. M. Cotton Sur. Drlg. S.W. sd. 7,795 ft.

Segno—Polk County

Gulf Oil Corp.'s No. 4 Quinn, A. Morales Sur. R.U.

Gulf Oil Corp.'s No. 30 Wing, I.&G.N. Sur. 15. T.D. 8,080 ft.

Gulf Oil Corp.'s No. 32 Wing, I.&G.N. Sur. 14. T.D. 8,069 ft.

Gulf Oil Corp.'s No. 33 Wing, I.&G.N. Sur. 15. Loc.

Gulf Oil Corp.'s No. 34 Wing, I.&G.N. Sur. 13. Loc.

Humble O. & R. Co.'s No. 22 Kirby Lbr. Co., M. Victor Sur. Drlg. sh. 8,112 ft.

Joe's Lake—Tyler County

Republic Prod. Co.'s No. 1 fee, A. Sterne Sur. T.D. 5,992 ft.; run csg.

Republic Prod. Co.'s No. 35 fee, I.&G.N. Sur. 15. Drlg. sh. 6,386 ft.

Hilje—Wharton County

Texas Co.'s No. 2 Peters, E.T.R.R. Sur., Sec. 101. Loc.

GULF COAST WILDCATS

Brazoria County

Glenn McCarthy's No. 1 E. W. K.-Andrau, H.T.&B. Sur. 5. 10¾-in. csg. 3,512 ft.; T.D. 11,468 ft.; sdtrkd.; T.D. 11,423 ft.; set 4-in. lnr. on bttm.; W. O.C.

Glenn McCarthy's No. 2 Houston Farm Dev. Co., J. Perry & E. Austin Sur. 7. 10¾-in. csg. 3,492 ft.; T.D. 11,760 ft.; 5½-in. lnr. cs. 11,170 ft.; perf. csg. 11,080-83 ft.; reperf. csg.

Glenn McCarthy's No. 1 W. B. Munson, Samuel Carter Sur. Drlg. sh.&L. 7,928 ft.

Rowan & Nichols Oil Co.'s No. 1 Hubbard, Wm. Harris Sur. Spd.

Chambers County

Humble O. & R. Co.'s No. 1 State, Sec. 247, Galveston Bay. Loc.

Humble O. & R. Co.'s No. 1 State, Sec. 288, Galveston Bay. Loc.

Sun Oil Co.'s No. 1 Clara C. Smith. T.& N.O. Sur. 82. T.D. 8,549 ft.; make D. S.T.

Standard Oil Co. of Texas' No. 61-54 State. Drlg. sh. 8,391 ft.

Colorado County

Cockburn Oil Corp. No. 1 R. W. Ferrs, H. Chrisman Sur. Loc.

Shell Oil Co., Inc.'s No. 1 Plow Realty Co., Obediah K. Winn Sur. Drlg. sh. 6,691 ft.

Fort Bend County

H. C. Cockburn's No. 1 G. W. Burkett, Bundieck Sur. Loc.

W. L. Goldston's No. 1 Hackstedt, H.& T.C.R.R. Sur., Sec. 47. R.U.

Temple Hargrove et al's No. 1 Sugar Ld. Ind., A. Alcorn Sur. T.D. 7,521 ft.; abd.

Pure Water Asso. Oil Co.'s No. 1 Geo. Armstrong, Jas. Scott Sur. Drlg. sh. 1,305 ft.

Galveston County

Continental Oil Co.'s No. 1 Stewart Title Guaranty Co., Perry & Austin Sur. Drlg. sh. 9,040 ft.

Grimes County

L. J. Sessions et al's No. 1 J. T. Barry S. Fuelton Sur. T. Wlx. 6,559 ft.; cg. sdy. sh. 6,663 ft.

Harris County

T. A. Carlton Bunte et al's No. 1 Bender, J. W. Singleton Sur. 10¾-in. csg. 1,205 ft.; T.D. 8,003 ft.; abd.

Gulf Oil Corp.'s No. 1 H. H. Roberts, A. Roberts Sur. T.D. 7,583 ft., S.D.

Martin Thompson's No. 1 Highlands Farm Corp., J. White Sur. Drlg. sh. 1,630 ft.

Jackson County

W. Stewart Boyle's No. 1 J. M. Bennett, R. Musquez Sur. Drk.

J. F. Hutchins et al's No. 1 Wearden, J. Williams Sur. R.U.

John O'Neal et al's No. 1 Ward est., I.& G.N.R.R. Sur. Loc.

Jasper County

Midwest Co.'s No. 1 W. B. Boykin, M. Rack Sur. T.D. 1,275 ft.; rmg.

Jefferson County

Hebert & Smith's No. 1 W. S. Clubb, J. L. Lawhorn Sur. 10¾-in. csg. 1,184 ft.; drlg. L.&sh. 8,483 ft.

Merrimac Oil Corp.'s No. 1 State, Tr. 72, 50 ft. due E of Harwell's abd. hole. W.O.; R.U.

Liberty County

Gulf Oil Corp.'s No. 1 Kirby Lbr. Co., Hugh Means Sur. T.D. 8,011 ft.; abd.

Hebert & Smith's No. 1 W. E. Boyt, H. &T.C.R.R. Sur. T.D. 8,834 ft.; cleaned hole to 8,096 ft.; sdtrkd. 7,824 ft.; 7-in. csg. 8,700 ft.; T.D. 8,865 ft.; perf. csg. 8,535-75 ft.; made sqz. job; W.O.; D.S. to D.D.

Matagorda County

Deep Rock Oil Corp.'s No. 1 Tom Petruchia, F. W. Dempsey Sur. Drlg. sdy. sh. 6,980 ft.

Marr McLean's No. 2 Gulf-Tex Oil Co., Ira Ingram Lge. R.U.

Stanolind O. & G. Co.'s No. 1 General American Life Ins., J. C. Peyton Sur. Drlg. sd.&sh. 9,886 ft.

Texas Gulf Prod. Co.'s No. 1 Gulf Tex. Oil Co., Ira Ingram Sur. Drk.

Texas Co.'s No. 1 Taylor, Freeman George Sur. Drlg. sh. 8,016 ft.

Van M. Vincent's No. 1 J. F. McNabb Est., E. R. Wightman Lge. Loc.

Montgomery County

H. C. Cockburn et al's No. 1 Bender. Montgomery Co. Sch. Ld. and De Crow Sur. Loc.

Continental Oil Co.'s No. 1 Bender est., Montgomery Co. Sch. Ld. Sur. 13⅜-in. csg. 1,243 ft.; drlg. sh. 9,956 ft.

David B. MacDaniel's No. 1 Hattie O. Baldwin, Walker Co. Sch. Ld. Sur. 10¾-in. csg. 1,230 ft.; T.D. 9,741 ft.; 5½-in. csg. on bttm.; perf. csg. est. 9,300-9,400 ft.; swbg.

San Jacinto County

Harrison & Abercrombie's No. 1 W. S. Dixon, Solomon Cole Sur. Loc.

Shell Oil Co., Inc.'s No. 1 Santa Fe Tie & Lbr. Co., J. Rankin Sur. Drlg. sh. 1,930 ft.

Tyler County

J. C. Bonham's No. 1 Southwestern Lbr. Co., F. Smyth Sur. T.D. 1,340 ft.; P.B 1,126 ft.; 4-in. csg. 1,107 ft.; flwd. F. L.O. for 3 hrs.; sanded up.

Washington County

J. A. Deering's No. 1 C. W. Bohne, S. Gates Sur. S.D. 6,545 ft.

Mount Selman Oil Co.'s No. 1 Fritz Fuelberg, W. Lightfoot Sur. S.D. 5,962 ft.

Wharton County

Cockburn Oil Corp.'s No. 1 Leverage, Jonathan Scott Sur. Drlg. sh. 8,332 ft.

Humble O. & R. Co.'s No. 1 Wallace & Wells, Morris & Cummings Sur. T.D. 7,004 ft.; abd.

Dr. T. M. Neal's No. 1 fee, Elisha Flack, 4,840 ft.

Strake Pet. Corp.'s No. 1 Poole, Sec. 25, G.H.&H. Sur. T.D. 10,110 ft.; 5½-in. csg. on bttm.; P.B. 9,973 ft.; perf. csg. 9,938-55 ft.; flwd. 3 B.F.P.H., 30% oil, 70% wash wtr.; started to flow 100% S.W.; killed; reperf. csg. 9,927-50 ft.; flwd. S.W.; perf. csg. 9,927-50 ft.; flwg. S.W.; killed; T.A.

S. W. TEXAS WILDCATS

Aransas County

Continental Oil Co.'s No. 2 St. Charles Co., R. D. Blassman Sur.; (relief well to blow out); S.D. 2,740 ft.

Atascosa County

Red Bank Oil Co. et al's No. 1 J. P. Pratt Francisco de la Garza Sur. 46 7-in. csg. 2,347 ft.; set 5½-in. lnr. 3,074 ft.; S.D. 3,276 ft.

Bastrop County

August Bering's No. 1 Rivers, B. Osborne Sur. R.U.

J. L. Collins & Co.'s No. 1 Powell, J. G. Weichmeyer Sur. T.D. 2,762 ft.; abd.

C. R. Franklin's No. 1 Oscar McDonald, Martha Baker Sur. T.D. 2,232 ft.; fsg.

Ogden & Riddle's No. 6 Riddle, J. B. Blalock Sur. R.U.

Bee County

Mills Bennett Prod. Co. and Anderson-Prichard Oil Co.'s No. 2 Robinson, J. M. Uranga Sur. (Wlx. test, West Tuleta field). 13⅜-in. csg. 2,537 ft.; 9⅝-in. csg. 7,804 ft.; T.D. 9,210 ft.; perf. csg. 7,545-50 ft.; tstd. 6½ bbl. dist. per hr.; ¼-in. ck. on tbg.; T.P. 2,600 lb.; C.P. 2,250 lb.; S.I.; W.O.

Sultex Oil Co.'s No. 1 Wood, Jas. McGeehan Sur. T.D. 5,791 ft.; sdtrkd.; drlg. into old hole; S.D.

Union Prod. Co.'s No. 56 Ray T. Hanson Sur.; (Pettus field). Wlx. test: 10¾-in. csg. 4,856 ft.; T.D. 8,990 ft.; D.S.T.

Bell County

J. J. Cormas' No. 1 Jeff Ellis, Elizabeth Berry Sur. S.D. 493 ft.

Bexar County

C. G. Bigby and Pierce's No. 1 Kelso, F. Rodriques Sur. T.D. 345 ft.

Joe Noake's No. 1 San Antonio Sub. Irrg. Farm, W. Miller Sur. 180. Drlg. 705 ft.

Philtop O. & G. Co.'s No. 2-A Patton, Fernando Rodriguez Sur. T.D. 1,933 ft.; S.D.

J. A. Tarver's No. 1 Florence Lam, Manuel de Luna Sur. 3. 6⅝-in. csg. 1,205 ft.; T.D. 1,692 ft.; cd. bkn. sh. 1,638-92 ft.; S.S.O.; bailed est. 10 bbl. oil P.D. before sanding up; S.D.

J. A. Tarver et al's No. 1 Joseph Leonard, Manuel de Luna Sur. 3. S.D. 1,696 ft.; abd.

Burleson County

H. Y. Barnett's No. 1 Giesenschlag, J. W. Hollingsworth Sur. S.D. 1,935 ft.

Caldwell County

J. E. Dickson's No. 1 Jeff Connolly, J. D. Rains Sur. Drlg. sh. 550 ft.

Kean & Williamson's No. 1 E. E. Rector, J. Roberts Sur. S.D. 1,100 ft.

Calhoun County

Coronado Corp.'s No. 1 K. Weider, Hidalgo Sur., 3 mi. SE Seadrift. "Tight well"; reported to be tstg.; 5½-in. csg. 9,750 ft.; perf. csg. 9,500-9,600-9,700 ft.; rec. S.W.; made sqze. job at 8,580 ft.; S.D.

Eura B. Oil Co.'s No. 1 T. P. Traylor, Sec. 3, I.&G.N. Sur. Loc.

Cameron County

Sal Vieja Oil Co. et al's No. 1 Garcia, Santa Isabel gr. T.D. 8,322 ft.; 8⅝-in. csg. on bttm.; drlg. plug.

De Witt County

Atlantic Ref. Co.'s No. 1 Pearl Conwell, Chas. Lockhart Sur. T.D. 8,518 ft.; 5½-in. csg. 8,286 ft.; rec. S.W. 8,030-40 ft.; perf. csg. 7,855-85 ft.; flwg. 72 bbl. dist. per day; ¼-in. ck.; T.P. 2,450 lb.; C.P. 2,650 lb.

Duval County

Alaska Tex Oil Corp.'s No. 2 W. R. Peters, B.S.&F. Sur., Sec. 791. T.D. 2,800 ft.; abd.

G. W. Basom's No. 1 Adami, Arnold & Barrett Sur. 47. S.D. 457 ft.

W. L. Catlin et al's No. 1 Louis Escapule, J. Poitevent Sur. 73. R.U.

Sun Oil Co.'s No. 1 Garcia, A.B.&M. Sur., Sec. 407. Drlg. sh. 4,120 ft.

Falls County

J. Shaunfield's No. 1 Barganier, J. M. Graham Sur. Bda. L.; S.S.O.; T.D. 1,188 ft.; recmtd. csg.; W.O.; cmt. failed to hold.

Gonzales County

M. T. Huebner's No. 1 M. P. Smith, R. Plummer Sur. T.D. 1,135 ft.

Guadalupe County

F. W. Nute et al's No. 2 Howell, Jacob Darst Sur. 9. T.D. 1,144 ft.

F. D. Spratt's No. 1 Wm. Zuchl, Claiborne Rector Sur. S.D. 855 ft.

Hidalgo County

Gulf State Oil Co.'s No. 2 Cardinas, San Salvador del Tule gr. 16-in. csg. 157 ft. T.D. 8,700 ft.; hole cleaned; run csg.

Jim Hogg County

J. L. Collins & Co.'s No. 1 Palacios, D. G. Duce Sur. 287. Drlg. sh. 3,263 ft.

R. W. Erwin's No. 1 Jauer, H.&G.N.R.R. Sur. 15. Drlg. sdy. sh. 2,294 ft.

Humble O. & R. Co.'s No. 5 C. T. Mestena O. & G. Co., Las Vivoritas gr. R.U.

H. H. Howell and Tesemelis' No. 1 D. C. Daniels, M. Berrera gr. Loc.

Sun Oil Co.'s No. 3 East Antonio, V. Prado Sur. 38. T.D. 4,207 ft.; abd.

Jim Wells County

Frank Gravis, Inc.'s No. 1 Forry, Lavaca gr. S.D. 5,740 ft.; abd.

Henshaw Bros.' No. 1 Blasehke, Casa Blanca gr. Drlg. sdy. sh. 3,987 ft.

H. H. Howell's No. 1 Garza, La Tinaja De Lara gr. 10¾-in. csg. 753 ft.; drlg. sh. 6,310 ft.

M. M. Miller's No. 1 fee, Casa Blanca gr. T.D. 232 ft.; S.D.

W. B. Osborne et al's No. 1 Almond, E. Riggs Sur. 10¾-in. csg. 502 ft.; T.D. 5,223 ft.; abd.

Wm. Spice et al's No. 2 Schaller, Los Presnos de Abajo gr. Loc.

Windsor Oil Co.'s No. 1 Kusel, Casa Blanca gr. Drlg. sh. 2,387 ft.

Kendall County

C. M. Dewey's No. 2 Seidensticker, B. Davis Sur. 20. S.D. 950 ft.

Kimble County

Austin Bridge Co.'s No. 1 Wilkinson, Brooks & Burleson Sur. S.D. 492 ft.
J. C. Renfro's No. 1 D. C. Morales, Hrs. of H. Grote Sur. 423. T.D. 575 ft.
Schwab-Carlyle & Auld's No. 1 Baker. F. C. Stisser Sur. T.D. 799 ft.
E. E. Sorey's No. 1 Frank Baker, Benj. Underwood Sur. 443. Drlg. 140 ft.

Kinney County

Cooper Gas Co.'s No. 1 L. L. Farr, Geo. L. Bledsoe Sur. 835. Drlg. sd. 2,215 ft.

Kleberg County

Skelly Oil Co.'s No. 1 State, Laguna de Los Olmos gr., Tr. 385. Drlg. sh. 6,537 ft.

Lee County

Fred Pederson et al's No. 1 Brown, David Hudson Sur. T. Glen Rose L. 6,600 ft.; Drlg. L. 7,980 ft.

Live Oak County

H. F. Baker's No. 2 Saunders, C. Scanlon Sur. 67. T.D. 1,087 ft.; abd.
E. M. Jones' No. 1 West, Lot 400, Blk. of West subd. T.D. 10,839 ft.; W.O.C.
Luling O. & G. Co.'s No. 2 R. F. Byler. A. A. Dinn Sur. 182. Drlg. S.W. sd. 4,433 ft.
Messer & Cage's No. 1 Kluver, S. E. Gilmore Sur. 406. 10-in. csg. 35 ft.
Pocono Dev. Co.'s No. 1 San Antonio Joint Stock Ld. Bnk., Richard Everett Sur. 1. T.D. 1,827 ft.; abd.
W. R. Quinn, et al's No. 1 Stolze, J. F Huizar Sur. 31. Cg. 1,096 ft.
Smith & Storey's No. 1 Lyne, A.C.H.& B. Sur. 163. Loc.
L. W. Stieren's No. 3 Lange, Thos. Adams Sur. T.D. 1,497 ft.

McMullen County

C. D. Scarborough's No. 1 First Nat'l Bk. of Rosebud, Jas. Garner Sur. T.D. 2,100 ft.; abd.
C. C. Shumway & Burns' No. 7 Shiner, H. M. Brewer Sur. 1. Drlg. 1,570 ft.
Tybro Roy. Corp.'s No. 1 F. B. Horton, Jas. M. Jean Sur. 29. T.D. 656 ft.; 5½-in. csg. 650 ft.
Tybro Royalty Corp.'s No. 2 Martin, M L. Williams Sur. T.D. 753 ft.; abd.
Van Dresar's No. 2 Brown Sur. 54. Loc.

Medina County

G. R. and L. J. Dorsey's No. 1 Robertson, John George Sur. 9. R.U.
Great Southern Exp. Co.'s No. 1 A. Muennick Sur. 5. S.D. 410 ft.

Milam County

Fritz Fuchs' No. 1 Unaseh, Jose Justo Llendo Sur. T. clk. 1,100 ft.; T.D. 1,895 ft., L.; 5½-in. csg. 1,865 ft.; swbg; no show oil.

Nueces County

John Manley et al's No. 1 Ruegg, Geo. H. Pauls subd. of Driscoll ranch. Loc.
Richardson Pet. Co.'s No. 1 Studer, M. L. De Herrera gr. Drlg. sh. 6,840 ft.
Wellington Oil Co. and Seaboard Oil Co.'s No. 1 Swenson, Santa Petronilla Sur. Perf. csg. 5,300-21 ft.; prep. to acd.; T.D. 7,007 ft.

San Patricio County

Argo Oil Co.'s No. 1 Mary East, J. P. Borden Sur. T.D. 4,831 ft.; abd.
L. L. Smith's No. 1 Timon, Town Tr. of San Patricio, De Hibernia. Drlg. sh. 2,812 ft.
Texas Gulf Prod. Co.'s No. 1 San Antonio Loan & Tr. Co., M. McAulev Sur T.D. 7,537 ft.; 5½-in. csg. 6,724 ft.; perf. csg. 6,675-77 ft.; well blew out.
Tide Water Asso. Oil Co. and Sinclair Prairie Oil Co.'s No. 1 Ragsdale, S. S. Gillett Sur. Drlg. sh. 7,315 ft.
Fred Wood et al's No. 1 C. E. Hart, Wm. G. Burgess Sur. 5½-in. csg. 7,250 ft.; perf. csg. 6,901-09 ft. and 6,910-21 ft.; flwd. 35 B.O.P.D.; tstg.

Starr County

Lynes & Robertson's No. 1 Villareal, C C.S.D.&G.N.R.R. Sur. 241. Loc.
Sun Oil Co.'s No. 1 W. G. Lehr, C.C.S.D R.G.N.G.R.R. Sur. Cg. sdy. sh. 5,105 ft.
Sun Oil Co.'s No. 1 Rodriguez, Santa Teresa gr. T.D. 7,502 ft.; tstg. 6,434-39 ft.; tstd. 2,100 lb. W.P.; 16-in. D.S.T.; perf. csg. 6,441-44 ft.; tstg.
Syndicate Oil Corp.'s No. 1 Sanchez, Santos Sanchez Sur. 344. T.D. 1,004 ft.

Travis County

J. H. Sprouls and A. G. Hinn's No. 1 A. D. Balm, Santiago de Valle gr. S.D. 545 ft.
J. C. Tittle's No. 1 Darlington, Buckman Sur. 40. Drlg. 665 ft.

Val Verde County

Joiner Oil Co. et al's No. 1 Clyde Sellers T.D. 1,848 ft.; S.D.

Victoria County

John Biaffer et al's No. 1 Edwards, D. Mira Sur. Tstd. 475 lb. W.P.; rec. drlg. mud, S.O.; D.S.T. 5,012-50 ft.
Colton & Colton's No. 1 Buhler est., 1 R.R. Co. Sur. 27. T.D. 2,698 ft.; 5¼ in. csg. 2,696 ft.; I.P. 28 B.P.D.; 5/32-in. ck.; T.P. 900 lb.; C.P. 1,060 lb.; S.I.
Colton & Colton's No. 1 Terrell, J. B. Sideck Sur. Drlg. sh. 630 ft.
Humble O. & R. Co.'s No. 1 R. H. Weber, S.A.&M.G. Sur. 9. Drlg. sh. 2,310 ft.
Texas Gulf Prod. Co.'s No. 1 Kester, C. M. Creanor Sur. Drlg. sdy. sh. 3,536 ft.

Webb County

Cash & Reynolds' No. 1 Frost, C.C.S.D.& R.G.N.G. Sur. Drlg. 1,280 ft.
H. E. Hall's No. 1 Slator Mission Oil Co., J. V. Borrego gr. R.U.
M. L. Massingill's No. 2 Kirkpatrick, C. C.S.D.&R.G.N.G. Sur. 59. Loc.
Sinclair Prairie Oil Co.'s No. 1 Callaghan Ld. & Cattle Co., B.S.&F. Sur. 585. 13⅜-in. csg. 1,598 ft.; drlg. sh. 7,230 ft.

Williamson County

C. C. Lanier's No. 1 Guental, Harry Cooke Sur. R.U.
C. D. Lane's No. 1 Krieg, H.T.&B. Sur. 3. Drlg. L. 1,410 ft.

Wilson County

W. D. Moore et al's No. 1 Lorens, Morris May Sur. S.D. 75 ft.
E. E. Young's No. 1 O. D. McMeans, C W. Parrott Sur. T.D. 2,104 ft.; twisted off D.S.; prep. to start new hole.

Zapata County

J. P. Martin et al's No. 1 Serapio Vela El Grullo gr. T.D. 3,500 ft.; P.B. 2,643 ft.; perf. csg. 2,375-2,400 ft.; tstg.

WEST TEXAS WILDCATS

Andrews County

Helmerich & Payne, Inc.'s No. 1 University, Sec. 11, Blk. 11, University Sur.; 5,500-ft. test. W.O.C. 192 ft.
Illinois Oil Co.'s No. 1 University, Sec. 14, Blk. 12, Univ. Sur. Drlg. 3,135 ft.

Concho County

Floyd Dodson's No. 1 Wilson, Thomas Green Sur. 1; 3,500-ft. test. S.D. 8-in. 3,142 ft.

Crane County

Gulf Oil Corp.'s No. 5 M. B. McKnight, Sec. 1, Blk. 21-B, P.S.L. Sur. Drlg. 6,345 ft.
Gulf Oil Corp.'s No. 1-K University, 330 ft. N and E lines, Sec. 2. Blk. 31, University Sur. S.D. 3,390 ft.
Gulf Oil Corp.'s No. 12 Waddell, Sec. 30, Blk. 26-B, P.S.L. Sur. 12-in. 532 ft S.O. 3,215-20 ft.; S.S.G. 3,635 ft.; 8-in. csg. cmtd. 3,713 ft.; S.O. wtr. 3,763 ft. W.O.C. 3,750 ft.
Gulf Oil Corp.'s No. 31 Waddell, Sec. 5, Blk. 24-B, P.S.L. Sur. Drlg. 505 ft.

Crockett County

Clark & Cowden's No. 1 G. D. Atwood, Sec. 49, Blk. H.H., G.S.&S.F. Sur. M. I.M.
Continental Oil Co.'s No. 3 Todd unit, Sec. 29, Blk. WX, G.C.&S.F. Sur., E offset to discovery well. Drlg. 1,843 ft.
Moore Explin. Co.'s No. 1 A. C. Hoover, Sec. 16, Blk. 1, G.C.&S.F. Sur. Drlg. 55 ft.
Moore Explin. Co.'s No. 1 Noelke, Sec. 10, Blk. G.G. S.D.R. 130 ft.
Soma O. & G. Synd.'s No. 1 W. T. Noelke, NW part Sec. 30, Blk. GG, H. E.&W.T. Sur. Hit sat. at 1,035 ft.; 60 B.P.H. with 40,000,000 cu. ft. gas.

Dawson County

Ray Albaugh's No. 2 Robinson, NW NW Sec. 54, Blk. M, E.L.&R.R. Sur. Loc.

Ector County

Everts Drlg. Co.'s No. 1 J. L. Johnson, Sec. 30, Blk. 43, Twp. 1s, T.&P. Sur. No report; 120 ft.
M. A. Grisham et al's No. 1 R. B. Cowden, 600 ft. from N and E lines, Sec. 4, Blk. 45, Twp. 1n (deep test). T.&P. R.R. Sur. P.B. 4,490 ft.; W.O.C.
Western & Southern Oil Co.'s No. 1 Smith, NW cor. Sec. 6, Blk. 42, T-1-S, T.&P. Sur.; deep Holt-horizon test. Swbg. and tstg. 4,431 ft.

Hockley County

Denver Prod. & Ref. Co. and Helmerich & Payne, Inc.'s No. 1 Whiteface Farms, 660 ft. from S and E lines Labor 22, Lgt. 77, Reeves C.S.L. Sur. Had 72 ft. of sat.; drld. plug and found no shows; T.D. 4,796 ft.; tstd. sulf. wtr.; S.D.O. 4,794 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co.'s No. 1 Briggs, Sec. 24, Blk. 73, Twp. 7, T.& P. Sur. C.O. 6,172 ft.

Mitchell County

Ewing & Hanes' No. 1 G. L. Grable, Sec. 195, Blk. 3, H.&G.N. Sur.; 1,800-ft. test. Drlg. 1,342 ft.
N. V. Hilburn's No. 1 E. T. Strain, Sec. 82, Blk. 97, H.&T.C. Sur. W.O.C. 7-in. 1,465 ft., T.D.

Pecos County

Humble O. & R. Co.'s No. 1 Young, Sec. 33, Blk. 10, H.&G.N. Sur. Top detrital 5,185 ft.; T. Simpson 5,624 ft. after logging 504 ft. of detrital; drlg. 6,902 ft.; still in Simp. L.
B. McCandless and General Crude Oil Co.'s No. 1 Virginia W. Crockett, Sec. 5, Blk. 110, T.C.R.R. Sur. T. Ellenburger 4,401 ft.; tstg. est. 6,000,000 cu. ft. gas after acd.; rng. tbg.; T.D. 4,479 ft. est. 4,000,000 cu. ft. gas and 365 B.O. P.D.; made 531 B.O. in 5 hrs.; S.I.
H. H. Sides' No. 1 Blackstone-Slaughter, Sec. 29, Blk. 129, T.&St.L. Sur., 1,050 ft. W, 250 ft. S lines of section. Drlg. 458 ft.
R. L. Walker's No. 1 White & Baker, Sec. 86, Blk. 194, G.C.&S.F. Sur. Prep. shoot 2,016 ft.; S.S.O.; tstg. 20 B.O.P. D. at 2,016 ft.

Reeves County

T.A.T. Oil Co.'s No. 1 U. G. Orenderff, Sec. 10, Blk. 59, P.S.L. Sur. S.D.O. 1,901 ft.

Scurry County

Coffield & Guthrie, Inc.'s No. 1 J. W. Moar, Sec. 334, Blk. 97, H.&G.N. Sur., NW Sec.; 4,500-ft. test. Drlg. 980 ft.
Coffield & Guthrie's No. 1 Reiter, Sec. 155, Blk. 97, A.T.&T.C. Sur. Tstg. 2,950 ft.

Stonewall County

Shell Oil Co., Inc.'s No. 1 Smith, Sec 143, Blk. 1, H.&T.C. Sur. Tstg. W.S.O. 5,617 ft.; drlg. 3,240 ft.
I. Southern's No. 2 Carlisle, Sec. 293, Blk. D. H.&T.C. Sur. T. Ellenburger 5,540 ft.; S.S.O. 6,543 ft.; P.B. to 5,544 ft. to test in Ellenberger L.; T.D. was 6,728 ft. in Hickory sd. Rng. tbg. to treat at P.B. depth 6,555 ft. from 6,728 ft., T.D.; treated with 2,500 gal.; then swbd. mostly acd. wtr.; tstg. only wtr.; S.D.; W.O.

Terrell County

E. M. Thomasson's No. 2 Bates, Sec. 30, Blk. 1, I.&G.N. Sur. Rng. 7-in. 1,406 ft.

Terry County

Denver Prod. & Ref. Co.'s No. 1 Ima Lewis, SE SE Sec. 62, Blk. DD, J. H. Gibson Sur. Loc.
Geo. P. Livermore's No. 1 M. E. Jacobson, Sec. 6, Blk. 11-D, C.&M. Sur. R.U.S.T. 4,901 ft.
Tide Water Asso. Oil Co.'s No. 1 Lowe, SW part Sec. 3, Blk. 37-C, P.S.L. Sur. Drlg. 4,842 ft.

Tom Green County

B. C. Mann's No. 1 Joe Funk, 330 ft. N, 1,650 ft. E lines, Sec. 34, Blk. 5, H.& T.C. Sur. S.D.R. 1,358 ft.
Dan Short's No. 1 J. G. Davidson, 2,161 ft. from SL, 2,493 ft. from NW cor. L. P. Moore Sur. S.S.O.&G. 2,660-65 ft.; S.D.O. 3,325 ft.

Ward County

Atlantic Ref. Co.'s No. 1 Wickett-University, Sec. 12, Blk. 16, University Lds. Sur., 1,980 ft. N and E lines of section. S.D.R. 680 ft.
Gulf Oil Corp.'s No. 5 Wristen, Sec. 13, Blk. 5, H.&T.C. Sur.; scheduled Ordovician test. Drlg. 6,620 ft.
Kenneth Slack's No. 1 Bird Hayes, Sec 148, Blk. 34, H.&T.C. Sur. T. Delaware 5,003 ft.; S.D. 5,010 ft.; T. Dela. sd. and hit est. 15,000,000 cu. ft. gas at 5,050 ft. and gas ignited; burning wild.

TEXAS PANHANDLE

Childress County

Texas Co.'s No. 1 P. B. Smith, NW NW Sec. 97, Blk. 9, H.&G.N. Sur. M.I.M.

Lipscomb County

Phil O'Neil's No. 1 Jacob Koch, NW SW Sec. 539, T.&T.C.R.R. Sur. S.D. 1,100 ft.

Ochiltree County

James R. Macon et al's No. 1 W. R. Norris, SW SE Sec. 212, Blk. 43, H.&T.C. Sur. T.D. 6,274 ft.; test sec. at 5,000 ft.; est. 6,000,000 cu. ft. gas on D.S.T.; tstg.; bailing 6,274 ft.; unloaded csg. at well and preparing to test increasing shows of oil and gas. C.O. and drlg. up junk; prep. rng. csg. to 5,000 ft.; est. 6,000,000 cu. ft. gas.

Potter County

Canadian River Gas Co.'s No. 1 City of Amarillo, in city limits just north of city. Drlg. 4,545 ft.

Sherman County

I.T.I.O. Co.'s No. 1 S. C. Bryant, C NW¼ Sec. 369, Blk. T-1, T.&N.O. Sur. R.U.S.T. 5,100 ft.

E. C. TEXAS WILDCATS

Anderson County

R. H. Williamson's No. 1 O. G. Rogers, Wm. Greenwood Sur., 6 mi. SW of Elkhart. Had gas blowout 4,380-90 ft.; under control; est. 30,000,000 cu. ft gas; flwg. through separator 5,407 ft making 125 bbl. dist. dly.; made 467 bbl. dist. in 7 days; tstg.

Camp County

W. C. McGlothlin's No. 1 Venters, S. Wright Sur., 3 mi. SE Leesburg. R.U. to D.D. to Pett. zone; prep. set csg. to test show in Pett. L. 7,943-90 ft.; had 47 ft. of sat. and por.; S.D. for tite trouble at 8,087 ft.; well has not been opened.

Cherokee County

C. C. Lanier's No. 1 W. O. Reagan, W T. Smith Sur., 2½ mi. E of Mixon Drk.
R. D. Salisbury's No. 1 W. M. Shankle J. A. Manchaca Sur., 1½ mi. NE Chilton. P.B. 1,103 ft.; S.D.; W.O.
Shell Oil Co., Inc.'s No. 1 S. H. Manes, J. M. Musquez Sur., 4 mi. S of Recklaw. Cg. 4,500 ft.

Falls County

City of Lott's No. 1 City of Lott, W. Gilmore Sur. Drlg. 3,115 ft.
M. Hays' No. 1 A. N. Taylor, F. Mahhan Sur., 1 mi. NE of Lott. Topped Buda 1,175 ft.; W.O.C. 1,204 ft.

Fannin County

C. Newburn's No. 1 A. G. Allen, M Caldwell Sur., 7 mi. NE of Banham R.U. and S.D.
Mrs. A. B. Powell's No. 1 Maude Barker, T. Harrison Sur., 9 mi. N of Bonham, SE cor. 42-ac. tr. S.D. 10 ft.

Freestone County

C F. W. Young's No. 1 Ray Simmons, M. DeCantona Sur., 1¼ mi. W of Simmsboro. S.D. 2,228 ft.

Gregg County

Roger Lacy's No. 1 Lacy, S. P. Ford Sur., 3 mi. SW of Longview; deep Trinity gas test. Drlg. 4,950 ft.

Henderson County

W. R. Manning's No. 1 Brown, Thomas Meux Sur., 1 mi. SW of Rowe & Baker area. M.I.M.
Ed Parson's No. 1 J. E. Davis, 3 mi. S of Eustace and in K. H. Douglas Sur. S.D. 75 ft.

Houston County

G. L. Dixon's No. 1 B. R. Crowson, J. Chealrs Sur., 5 mi. NW of Lovelady. Loc.
Elmer Hay, Tr.'s No. 1 Starr Pope, J. Forbes Sur., 2 mi. S of Lovelady, NW cor. 162-ac. tr. Loc.

Kaufman County

W. H. McGee's No. 1 Rutland Savings Bnk., John Baker Sur., 2¼ mi. NE of Tuloss. S.D. 3,080 ft.
T. G. Shaw, Tr.'s No. 1 Angus Wynne, B. S. Newman Sur., 8 mi. E. Kaufman. lower Trinity test. Drlg. 3,690 ft.

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Leon County

Alexander & Wilhite's No. 1 C. H. Mills, M. Copeland Sur., 2½ mi. E of Normangee. M.I.M.

Limestone County

Peyton Bros.' No. 1 Harris, P. Varella Sur. T. Pett. 5,549 ft.; cd. to 5,617 ft. with S.S.O.; D.P. stk. at 5,677 ft., T.D. pulled D.P. apart; 2-in. at 5,540 ft.; showing small amt. of gas.

McLennan County

T. M. Smart's No. 1 J. W. Mann, C O'Campo Sur., 4 mi. S of Waco. S.D. 1,327 ft.

Nacogdoches County

Melrose Oil Co.'s No. 2 C. N. Wilson. Hall & Mora Sur., 300 ft. SE of No. 1 Wilson abd. at 2,100 ft. in Jan. Loc.

Navarro County

C. F. Carter's No. 1 Allen Eden. M. Shire Sur., 2 mi. NE of Angus. Balling. wtr.; S.S.O.; 1,201 ft.

M. M. Johnson's No. 1 Flemming, J. Smith Sur., 5 mi. SE of Corsicana. Prep. abd. 1,785 ft.

Guy Sitton's No. 2 R. D. Fleming, John Harris Sur., 450 ft. E of No. 1 dry hole. Bailed S.S.O. and S.D. for test at 1,625 ft.

W. H. Warren's No. 1 L. Grey, E. Powers Sur., 9 mi. SE of Kerens. S.D. 660 ft.; T.D.

Robertson County

Rhett Wilder's No. 1 Moise Cerf, J. Erwin Sur., 7 mi. S of Franklin. Drlg. 650 ft.

Rusk County

Jeff Bolton's No. 1 Hall Wood, J. I. Sanches Sur., 2½ mi. NW of New Salem. Lost circ. and skd. rig to start new hole; T. Wdbne. with sat. at 4,145 ft.; S.S.O. 4,201 ft.; S.D. to test.

J. S. Harrell's No. 1 Citizens Natl. Bnk., M. C. Carmell Sur., 2½ mi. SE Henderson. O.W.D.D.; R.U. to dpn. below 6,802 ft.

A. O. Whittington's No. 1 Kangerga Bros., Ign. Castro Sur., 9½ mi. N and slightly E of Pirtle. S.D. 300 ft.

Smith County

Carmerson Corp.'s No. 1 T. Simpson, R. Walter Sur., 3 mi. NE of Winona, SE cor. of 1,234-ac. tr. Pits.

Sun Oil Co.'s No. 1 E. B. Huddle, Wm. Dickerson Sur., 2 mi. S of discovery dist. producer in Chapel Hill area; third D.S.T. failed; may test again or may P.B. to Glen Rose L.; sat. drld. from 7,983-8,019 ft.; T. Pett. 7,930 ft.; T. Tr. Pk. 8,090 ft.; tstg.; T.D. 8,226 ft.; est. 5 B.O. with wash wtr.; prep. drill plug at 8,226 ft.; P.B. 8,183 ft.; making 25 bbl. dist. and 250,000 cu. ft. gas dly.; Rodessa section; making dist.; prep. to comp.

Trinity County

Gossage et al's No. 1 First Natl. Bnk., B. F. Wright Sur., S of Trinity. R.U. and S.D.

Van Zandt County

J. B. Daniels' No. 1 W. R. Odom, J. Garcia Sur., 4 mi. NE of Mabank. Drlg. 2,081 ft.

E. L. Shackelford's No. 1 E. J. Combs. J. Wright Sur., 3¼ mi. NW of Grand Saline. S.D. 54 ft.

EAST TEXAS

(Border Counties)

Cass County

E. A. Stiller et al's No. 1 Glass, John Paxton Sur. Set 10-in. csg.; W.O.C.

Harrison County

Fohs Oil Co.'s No. 1 R. L. Sypert. R. Hooper Sur. Set 10¾-in. csg.; drlg. 2,650 ft.

J. A. Hughes' No. 1 Taylor. H. McNutt Sur. T.D. 2,612 ft.; W.O.S.R.

Marion County—Other

John Coates' No. 1 Burr et al. 3,200 ft. NL, 350 ft. EL. John Reeves Sur. Cg. sh.&sd. 2,310 ft.

B. I. Daniels' No. 1 T. O. Livingston, G. Coore Sur. T.D. 2,330 ft.; W.O. csg.

T. B. Donnell's No. 1 E. W. Easterling. 330 ft. S. 1,200 ft. W. NE cor. 200-ac. tr., M. G. Nall Sur. T.D. 2,341 ft.; set 5½-in. csg. 2,234 ft.: W.O.S.R.

M. D. Fitzwater's No. 1 C. Moseley. 330 ft. SE cor. 100-ac. tr., W. H. Burton Sur. T.D. 1,529 ft.; dropped in cavity at 1,519 ft.: W.O.

H. T. Manning's No. 1 T. O. Livingston, G. Coore Sur. Pits.

Sanders & Wycliffe's No. 1 M. E. Livingston, W. Coore Sur. Set 10-in. csg. 42 ft.; set 5½-in. csg. 2,306 ft., T.D.

Marion County—Rodessa

C. M. Beckett's No. 1 Perry, 466 ft. NW cor. Perry 126-ac. tr., C. Grayson Sur. Drlg. sh.&L. 5,977 ft.

Holcomb & Thomason's No. 1-A Madine, 400 ft. WL, 467 ft. NL, 33.6-ac. tr., A. D. S. Coy Sur. Set 9⅝-in. csg. 1,840 ft.; Hill sd. 5,979 ft.; Glovd 6,092 ft.; set 6-in. csg. 6,118 ft.; perf. and acd. 6,096-6,112 ft. and tstd. est. 30,000,000 cu. ft. gas; S.D.; W.O.; T.D. 6,118 ft.

Shelby County

Earl McDaniels et al's No. 1 J. S. Swann, 470 ft. EL, 1,400 ft. SL, 100-ac. tr., Ann Gray Sur. T.D. 2,378 ft.; 9⅝-in. csg. 585 ft.

Superior Oil Co.'s No. 1 Pickering Lbr. Co., 990 ft. E, 330 ft. N, SW cor. Lot 4, W. J. Crane Sur. T. Midway 1,555 ft.; T. Cane River 1,850 ft.; T. Annona 1,955 ft.; T.D. 2,658 ft.; P.B. 2,625 ft.; tstd. 5% oil and 95% mud and S.W.; recmtd. 2,615 ft.; 7-in. csg. set 2,595 ft.; oil sd. 2,618-21 ft.; pulled 1,910 ft. of 7-in. csg.; prep. P.B. 1,918 ft. and comp. as gas well.

WEST CENTRAL TEXAS DISTRICT

Brown County

A. M. Stalcup's No. 1 J. C. Morris, 900 ft. S, 700 ft. E lines of Morris tr. in John Goodwin and W. B. Hester Surveys. S.D. csg. 972 ft.

M. R. Staurd's No. 1 E. Hennigan, NW M.E.P.&P. Sur.; 1,000-ft. test. Drlg. 961 ft.; T. Caddo 949 ft.

Callahan County

D. Fox and E. L. Dunn's No. 1 A. and G. Berry. NE pt. Sec. 78, B.O.A. Sur.. 950-ft. test. Fsg. tools 910 ft.

N. D. Gallagher's No. 1 E. Grisson. SE pt. Sec. 2, Blk. 8, S.P. Sur. Spd. & S.D.

W. Lee's No. 1 H. W. Ross, 2,420 ft. w. 1,540 ft. S lines, Sec. 98, B.B.B.&C. C. Sur. U.R. 1,248 ft. to 1,280 ft.

C. A. Redmond's No. 1 H. T. Moore, SE cor. NE Sec. 9, Blk. 6, S.P. Sur.; 2,000-ft. test. U.R. at 1,843 ft.

J. L. Reeves' No. 1 N. A. Estes, SW¼ Sec. 4, Blk. 8, S.P. Sur., 2½ mi. S of Bowles pool. M.I.M.

Coleman County

Anzac Oil Corp.'s No. 1 McCord. 2,200 ft. E, 2,196 ft. S of B.B.B.&C. Sur. Drlg. 1,050 ft.

J. C. Ort's No. 1 Emet Walker. SE cor Hicks Sur. W.O.C. 700 ft.

J. W. Quinn, Tr.'s No. 1 Duty & Stevens, SE cor. Sec. 25, H.T.&B. Sur.; 1,800-ft. test. S.R. 290 ft.

Robertson & Bradford's No. 1 Morris. 330 ft. N, 1,582 ft. W lines. Blk. 2 G.H.&H. Sur. Prep. test; Gardner sd. topped at 3,530 ft. with sat.; awaiting official ga.

Comanche County

H. S. Bassart's No. 1 J. H. Tate, NW cor. J. M. Robinson Sur., Abst. 1170; 900-ft. test. Mch.

Coryell County

Kistler O. & G. Co.'s No. 1 Barnes, 360 ft. SE line, 3,700 ft. NE line of H. Farley Sur., 3 mi. NE of Gatesville; 2,500-ft. test. Fsg. 698 ft.

Eastland County

Dobbs Oil Corp.'s No. 1 Mrs. R. L. Poe, 1,320 ft. from S and E lines, of SE¼ Sec. 37, Blk. 3, H.&T.C. Sur. Drlg. 900 ft.

Dobbs Oil Corp.'s No. 1 Thomassor, S. H. Key Sur., 330 ft. from N, 846 ft. from E lines of 80-ac. tr. Drlg. 1,100 ft.

States Oil Corp.'s No. 1 V. N. Owen. NE Sec. 23, Blk. 2, T.&N.C. Sur. Drlg. in Ellenberger below 4,334 ft.

Steele & Black's No. 1 B. B. Poe, 150 ft. N and E lines, SE¼ Sec. 6, Blk. 2, H.&T.C. Sur.; 900-ft. test. Spd. and S.D.

Erath County

Dillingham's No. 1 Moring. Drlg. 3,150 ft.

T. G. Jackson's No. 1 J. W. Taylor, Prater Sur., Abst. 1029, 4 mi. NE of Desdemona. Est. 15 to 20 B.O.P.D. at 3,360-75 ft.; S.D. 3,395 ft.; not treated. fsg. tools 3,395 ft.

E. H. Young's No. 1 J. B. Mills, J. Harry Sur., 5 mi. NW of Dublin; 3,500-ft. test. M.I.M.

Hamilton County

A. J. Caldwell's No. 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines of W. H. Crowder Sur. Drlg. 2,333 ft.

Wallace & Wallace's No. 2 C. E. Lund, C S½ E 20 ac., N½ SW¼, R. J. Bailey Sur. 51. Csg. 300 ft.; S.D. csg. 3,265 ft.; T. Marble Falls 3,245 ft.; W.O.C. 3,256 ft.

Jones County

Erin Pet. Co.'s No. 1 J. M. Caton, Sec. 4, Orphan Asylum Lds. Tstg. sat. 3,360-3,404 ft.; P.B. 3,390 ft.; flwd. only sul. wtr.; shot 15 qt.; no results; S.D.O. 3,404 ft.

J. E. Farrell's No. 1 F. B. Reid, NW¼ Sec. 31, D.&D. Sur.; 3,500-ft. test. T.D. 2,429 ft.; U.R. 2,405 to 2,429 ft.

Humble O. & R. Co.'s No. 1 Ed Cliff 453-ac. tr. in E¼ of Ambrose Crain Sur. 214. Drlg. 5,140 ft.

T. D. Humphrey's No. 1 Triplet, J. J. Hughes Sur. 201, 3 mi. NW Hawley field. Cook sd. 2,185-93 ft.; flwg. by hds.; est. 6 B.P.H.

Iron Mountain Oil Co.'s No. 1 I. F. Wiley. 330 ft. from S and E lines SW¼ Sec. 14, Deaf & Dumb Ld. Drlg. 3,008 ft.

Jones & Stasney's No. 1 B. C. Humphrey. SE cor. SW Sec. 192, B.B.B.&C. Sur.. 1 mi. N of Avoca field. Loc.

Keeler's No. 1 Radford, SE¼ Sec. 20, Blk. 4, H.&T.C.R.R. Sur. Fsg. 1,888 ft.

Lewis Prod. Co.'s No. 1 M. T. Ramsey. NE cor. Sec. 80, Blk. 14, T.&P. Sur.; 2,000-ft. test. Drlg. 1,940 ft.

M. R. Mead's No. 1 E. Hicks, SE cor. Sec. 5, O.A.L. Sur.; 3,500-ft. test. Mch.

W. I. Southern's No. 1 A. A. Hayden, G. Martinez Sur., S of Anson on west side of Prichard pool; 4,000-ft. test. U.R. 2,488 ft.

Palo Pinto County

E. P. Wilson's No. 1 F. M. Watson, NW pt. of Sec. 10, Blk. 2, T.&P. Sur.; 3,250-ft. test. Drlg. 4,030 ft.

Parker County

Brown & Gardner Bros.' No. 1 Gilbert, T.&P. Sur., Abst. 1958. Tstg. gas; prep. D.D.

E. R. Marchman's No. 1 G. W. Keeling, F. Lildely Sur., Abst. 829, 1¼ mi. W of Springtown; 3,500-ft. test. M.I.M.

Runnels County

Davis' No. 1 Summers, W½ of tr. in Day Ld. & Cattle Co. Sur., W of Beddo field. Drlg. 3,607 ft.

J. E. North's No. 1 J. W. Reese, Day Ld. & Cattle Co., 2½ mi. S of McCullen. W.O.C. 2,030 ft.

Homer Price's No. 1 Williams, C S½ Sec. 26, D. Diaz Sur., N outpost to Beddo field. S.D.O. 2,561 ft.

Shackelford County

John E. Carson's No. 1 R. A. Elliott, 660 ft. S and E lines, Sec. 48, B.A.L. Sur.; 3,650-ft. test. Spd. and S.D.

Fain-McGaha Oil Corp.'s No. 1 T. W. Lee, 1,320 ft. N, 220 ft. E lines, Sec. 38, Blk. 12, T.&P. Sur.; 1,200-ft. test. Drlg. 1,124 ft.

Georgian Oil Corp.'s No. 1 Black ranch. C NE¼ of T.E.&L. Sur. 390, 10 mi NE of Albany; Ordovician test. Drlg. 4,310 ft.

L. Mollenkopf's No. 1 Jemeyson, Sec. 489, T.E.&L. Sur.; 600-ft. test. Drlg. 355 ft.

Swann & Gorsuch's No. 1 Sam Lazarus, SE SE Sec. 80, Blk. 13, T.&P. Sur. Drlg. 811 ft.

Stephens County

Guy Ewing's No. 1 Crudington, SE cor. T.E.&L. Sur. 1268, 5½ mi. S of Stribling field. Loc.

Jones Bros. Drlg. Co.'s No. 1 T.X.L., 660 ft. N and E lines SE Sec. 3, Blk. 3, S.P. Sur.; 4,050-ft. test. Drlg. 2,070 ft.

Panhandle Ref. Co.'s No. 1 Frank Magers, SE Sec. 1, Blk. 3, S.P. Sur., 1¾ mi. N of Fagg area. Prep. drill in 3,842 ft.

Pitzer & West and Brazos-Young Oil Corp.'s No. 1 H. Compton, SW SW Sec. 9, O.A.L. Sur., 1 mi. SE of Loving pool; 3,600-ft. test. Drlg. 1,915 ft.

J. R. Tolbert's No. 1 W. L. Martin, NW cor. NE¼ Blk. 1335, T.E.&L. Sur., 1½ mi. SW of Fagg area. Spdg.

Andrew Urban, Jr.'s No. 1 T. T. Brooks, 150 ft. N and W lines of NE 40 ac. of 106-ac. tr. in Sec. 90, University Lds. Sur. Loc.

C. W. Waddington's No. 1 J. W. Smith NW pt. of Sec. 56, L.A.L. Sur., 750-ft. test. S.D.O. 589 ft.

Taylor County

Green & Owens' No. 1 J. Bettes, R. Ortiz Sur. 19; 2,500-ft. test, Spd. and S.D.

Hose's No. 1 Bond, NE NE Sec. 40, Blind Asylum Lds., 2 mi. SW outpost to Bowles field. Drlg. 4,185 ft.

Texas Pacific Coal & Oil Co.'s No. 1 N. A. Reidenback, 990 ft. from N and W lines of Lot 19, Lge. 146 County Sch. Lds. S.D. for U.R. 2,782 ft.

Tal Vez Oil Co.'s No. 1 Rister, C S½ Sec. 1, SE Guadalupe C.S.L. Sur. Drlg. 1,940 ft.

NORTH TEXAS WILDCATS

Archer County

W. H. Gant's No. 1 A. Vogtsberger, Sec. 3, G. E. Co. A-146 Sur.; 5,200-ft. test. O.S. 4,659-71 ft.; cg. ahd. 4,715 ft.

Geo. B. Golden's No. 1 J. C. King, NE cor. Sec. 2422, T.E.&L. Sur. Loc.

E. F. Scott's No. 1 York, SE cor. SW¼ Sec. 1861, T.E.&L. Sur. Spd. & S.D.

Baylor County

Paul B. Scott et al's No. 1 C. H. Farr, Sec. 228, T.&N.O. Sur.; 3,100 ft. test. Drlg. 1,689 ft.

Hattie B. Madden's No. 1 J. J. James, 2,000-ft. test located 1,650 ft. from N and 150 ft. from E lines of Sec. 150, T.&N.O.R.T. Sur. S.D. 1,250 ft.

Clay County

Fulwood, Johnson & O'Connor's No. 1 R. L. Oliver, Sec. 2648, T.E.&L. Sur.; 4,100-ft. test. Drlg. 4,120 ft.

Walter Gant's No. 1 Edwards, S. C. Beldon Sur., Abst. 12, 4 mi. E of Henrietta. W.O.S. to C.O.

Alexander Goldsmith's No. 1 Republic Nat. Gas Co., 312 ft. N, 496 ft. W lines of Blk. 14, Parker Co. Sch. Ld. Sur., 1 mi. S of town of Petrolia; 4,500-ft. test. T.D. 2,572 ft.; S.D.O.; T. grnt. 2,522 ft.

Shell Oil Co., Inc.'s No. 1 Davis, Sec. 93, J. H. Belcher Sur. O.W.D.D.; S.D.O. 5,136 ft.

Staley Oil Co.'s No. 1 D. J. Percifield, Sec. 37, Belcher subd.; 5,000-ft. test. Drlg. 1,895 ft.

Carlos Wagner's No. 1 L. C. Thaxton, 3,630 ft. S, 330 E lines of 301-ac. tr., W.C. Donley Sur., Abst. 129, Sec. 4; 5,000-ft. test. Spd. and S.D.

Cooke County

Cranfill & Staley's No. 1 S. H. Peery, SW B.B.B.&C. Sur., Abst. 145. S.D. 2,505 ft.

C. E. Marshall et al's No. 1 Mrs. H. M. Stork, Sec. 13, B.B.B.&C. Sur. A-155; 5,200-ft. test. Drlg. 2,942 ft.

Cottle County

J. E. Burns et al's No. 1 J. E. Moss, Sec. 5, Blk. L, A. Forsythe Sur. Jnkd. 225 ft.; skd. 20 ft. S; S.D. 1,823 ft.

Denton County

Jones Drlg. Co.'s No. 1 H. Chapman, L. Moore Sur., Abst. 824. T.D. 1,800 ft.; P.B. 1,634 ft.; to perf. csg.; O.S. 1,003-15 ft.; P.O.P.

Shooks & Finnell's No. 1 Sanders, L.S.O. 2,013-21 ft.; tstg.

Foard County

Domain Oil Co.'s No. 1 Wilson, Marshall Univ. Sur. Drlg. 1,900 ft.

Ohio Oil Co.'s No. 1 M. E. Rasberry, NE cor. Sec. 26, S.P. Sur., 5,000-ft. test. Drlg. 5,575 ft.

Hardeman County

Norris & Gilbert's No. 1 Robert Weekley, SW SE Sec. 87, Blk. 16, H.&T.C. Sur. Drlg. 2,985 ft.

Jack County

Harper Pet. Co.'s No. 1 J. W. Kinder, SW¼ Sec. 2667, T.E.&L. Sur., Abst. 762. T.D. 2,160 ft.; S.D.

H. R. Smith's No. 1 I. G. Yates, SW cor. John Holderman Sur., 6 mi. NW Jacksboro. Drlg. 2,550 ft.

Montague County

British Am. O. P. Co.'s No. 1 J. A. Martin, Sec. 27, M.&T.C. Sur.; 6,000-ft. test. Drk.

Seitz, Comegy & Seitz' No. 1 King, 1,903 ft. W, 330 ft. N lines of SE¼ E. B. Wooten Sur., Abst. 480. Drlg. 3,072 ft.

W. H. Gant and Continental's No. 1 J. L. Brown, Sec. 58, E.T.R.R. Sur. 6⅝-in. 6,843 ft.; brkn. sdy. L. S.O. 6,843 ft.; treat. 8,000 gal. acd.; test showed O.& G. 7,036-56 ft.; T.D. 7,333 ft.; rng. 5½-in. lnr. 6,843-7,333 ft.; fsg. swb. and 5,800-ft. line; set retainer 6,500 ft.; perf. 52 shots 6,000-6,400 ft.; shot 10 qt. 6,470-80 ft.; no results; shot 20 qt. 6,300-10 ft.; 1,000 ft. mud, no oil; set plug 6,080 ft.; tstg.

Harvey Drlg. Co. et al's No. 1 D. A. Threadgill, Sec. 10, Jack Co. Sch. Ld. Sur. A-390.; 6,000-ft. test. Matl.

Oppman & Holtsclaw's No. 1 P. J. Blackburn, 1,400 ft. W, 567 ft. S line of Blk. 1, S.A.&M.G. Sur., 3 mi. SE of Montague. Loc.

Wm. J. Payne's No. 1 T. M. Baker, NW¼ Lot 42, W. J. Wells Sur., Abst. 844 5,000-ft. test. 5½-in. 5,354 ft.; W.O.C. cg. S.O. 5,318-47 ft.

W. H. Peckham's No. 1 Dr. Lawson, N. Kimbro Sur., Abst. 405. Loc.

Ramsey Pet. Corp.'s No. 1 W. H. Magee, A. C. Davis Sur., just outside of town of Montague. Drlg. 5,003 ft.

Sinclair Prairie's No. 1 T. H. Milam, Lot 54, A. Beason A-20 Sur.; 6,000 ft. test. Loc.

F. K. Williford's No. 1 W. M. Goldsmith, C of Blk. 13, Wallace Sur., in Bonita townsite. Loc.

Wichita County

B. C. E. Dev. Co.'s No. 1 F. P. Warren, NE cor. W. J. Smith Sur. 6⅝-in. 1,452 ft.; W.O.C.

S. H. Fagadau's No. 1 A. D. Potts, NE cor. Sec. 4, Blk. 7, H.&T.C. Sur. Basal 3,989-4,035 ft.; tstg.

Wilbarger County

Amerada Pet. Corp.'s No. 1 B. Goodpasture, Sec. 35, H.&T.C. Sur., Blk. 18. 8,000-ft. test. Drlg. 4,310 ft.

O. M. Stidham & Son's No. 1 C. D. Watts, Sec. 64, H.&T.C. Sur., Blk. 15.; 6,000-ft. test. Loc.

Young County

H. W. Dyer's No. 1 M. G. Cheney, M. L. Terry Sur., Abst. 1261. Drlg. 2,050 ft.

K. R. March's No. 1 Ed Burton, NE cor. Blk. 99, J. A. True Sur., Abst. 1640, 4 mi. SE Graham; 4,250-ft. test. S.D.; 6⅝-in. 3,804 ft.

A. T. Strong et al's No. 1 E. C. Stovall. Sec. 2946, T.E.&L. Sur. (4,800-ft. test). T.D. 4,805 ft.; 5½-in. csg. 4,728 ft.; perf. csg. 24 shots 4,660-86 ft.; tstd. S.W.; cmtd.; tstg. through csg. perfs. 4,610-80 ft.

Canadian Fields

(Continued from Page 221)

stone expected somewhere above 8,200 ft.

On the Grease Creek structure, west of Olds, Grease Creek-Northwest Co.'s No. 1, LSD 2, Section 13-29-7w5, is resuming from 7,017 ft. Test has been standing in the lower Blairmore, and should reach the Madison around 7,500 ft.

On the Mill Creek structure Alliance Royalties' No. 2, LSD 14, Section 11-2w5, is partially rigged and waiting for drill pipe and fuel.

Wainwright Deep Test

In the Fabyan-Wainwright field, East Central Alberta, Montreal-Alberta Oils' No. 1, LSD 2, Section 15-45-7w4, is preparing to resume from 4,500 ft. The test picked up the Devonian limestone at 3,385 ft. and cemented 6-in. casing at 3,420 ft. The log shows four gas sands between 2,119 and 3,389 ft. and oil at 2,294, 2,314 and 3,380 ft. Somewhat below 4,200 ft. a showing of ozocerite or grease was encountered.

BUTLER
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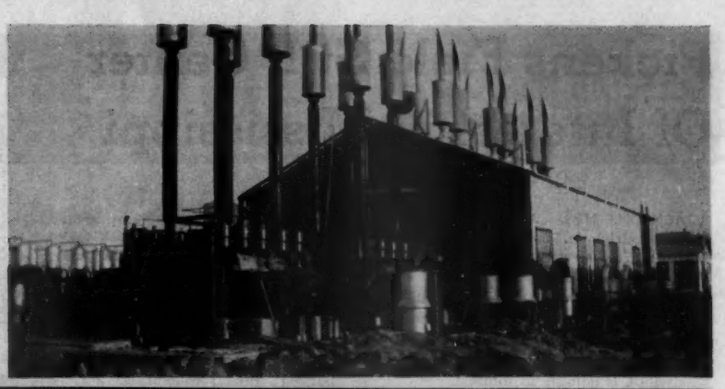

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Pickens Field Still Center Of Interest in Mississippi

By GEORGE WEBER

JACKSON, Miss., Apr. 22.—Leasing and wildcatting in Mississippi continued to concentrate in the central section of the state surrounding the Pickens oil field. Interest is still general throughout the state, however, and the northwest Alabama basin, comprising several counties in Alabama and northeastern Mississippi, is gaining in interest.

Attala, Holmes, Madison, Newton Rankin, Scott, Simpson Yalobusha and Yazoo counties were scenes of the most active play during the past week, and although numerous wildcat tests are already staked and drilling still more were expected shortly.

Interest was accelerated last week by shows of oil in a Holmes County wildcat, although later tests uncovered nothing of commercial importance. The test, Hawkins & Mathews' No. 1 Ellis, showed a very faint stain of oil in partial recovery of sand cored between 3,813-23 ft. and two drill-stem tests of the section showed only drilling mud, although slight blows were noted on opening the testing tool in both tests. Further coring from 3,923-39 ft. resulted in no recovery, and after changing core barrel, section cored at 3,942-58 ft. showed recovery of some sand with no oil taste or odor. Operators are drilling below 4,300 ft. in sand and shale.

Pickens

Exchange Oil Co. (Sinclair) has staked location for No. 1 Dixon, a diagonal northeast offset to the Pickens discovery well, Kingwood Oil Co.'s No. 1 Wilburn, the first indication of further drilling in the field. The most intense leasing and royalty play resulting from the Pickens discovery has centered in the area southeast of the discovery well.

Exchange Oil Co., which purchased a half interest in the Kingwood block prior to the discovery of oil, is laying 3,600 ft. of 4-in. line from the well to a spur on the Illinois Central Railroad, where a 10-car loading rack is being constructed, together with 2,000 bbl. of storage. The crude, it is reported, will be moved to New Orleans for export shipment.

Wildcatting Active

Numerous wildcats in the state are holding attention of operators. Three such tests were abandoned this week, however. In Madison County Ralph Johnson abandoned No. 1 Ray & Dinkins at a total depth of 5,300 ft. after encountering no shows, and Nelson Brothers abandoned No. 1 Stoner, a Yazoo County wildcat at 5,012 ft., also with no shows. In Simpson County Cleve Love and others' No. 1 Garner was junked and abandoned after 27 stands of drill pipe were twisted off several days ago at total depth of 6,038 ft.

Clarke County is sharing largely in interest concerning new and active tests. Arkansas-Mississippi Oil Co. is drilling at critical depth at 4,000 ft. in the Eutaw formation, on No. 1 State, and is moving materials into No. 1 Long Bell in the same county for an 8,000-ft. test.

Northwest Alabama Basin

Three separate operations are attracting added interest to the northwest Alabama or Warrior basin. In Marion County, Alabama, Seaboard Oil Co. has staked location for a wildcat in Section 28-11s-14w, on a 45,000-acre block taken from H. D. Easton & Son. In the same state, Choctaw County's active test, Union Producing Co.'s No. 1 McCorvey, taken over from the late Joe Modisett interests, is coring below the old total depth of 7,520 ft. after reaming down to bottom and recementing surface casing.

G. C. Grasty's No. 1 Kentucky Lumber Co., Itawamba County, Mississippi, wildcat, is flowing sulfur water with an estimated one-half per cent of live green oil. Although the oil show is of no particular commercial importance, it may be important in indicating deeper possibilities. The test, bottomed at 2,801 ft., has been reaming down with cable tools to set casing and shut out the sulfur water show before drilling deeper.

Tinsley

Two new Tinsley wells brought the field total to 40 this week, while two other tests are in final stages of completion. Union Producing Co. completed Nos. 14 and 15 Stevens in Section 1-10-3 for Woodruff sand producers in the Selma chalk formation. Tinsley production has declined recently due to restricted pipe-line purchases, with daily averages of about 6,250 bbl., 23 per cent of the field's estimated potential production with 39 wells.

MISSISSIPPI COMPLETIONS

Tinsley—Yazoo County

Union Producing Co.'s No. 14 Stevens, C SE SW Section 1-10-3, 324 bbl., 14/64-in. choke, Woodruff sand 4,744-74 ft., total depth 4,813 ft. Union Producing Co.'s No. 15 Stevens, 498 bbl., open tubing, total depth 4,676 ft.

Wildcat—Madison County

Ralph A. Johnston's No. 1 Ray & Dinkins, C SW SW Section 14-10n-13e, dry and abandoned at 5,300 ft.

Wildcat—Simpson County

Cleve Love's No. 1 N. E. Garner, 300 ft. north and east C Section 1-10n-17w, junked and abandoned, total depth 6,038 ft., twisted off drill stem.

Wildcat—Yazoo County

Nelson Brothers' No. 1 S. S. Stoner, C SE NW Section 2-11-5w, dry and abandoned, total depth 5,012 ft.

MISSISSIPPI

Attala County

F. R. Jackson's No. 1 Federal Land Bank, 410 ft. S. 620 ft. E NW cor. NW SE Sec. 29-16n-9e. R.U.

P. & M. Oil Co.'s No. 1 J. A. McMillin, 300 ft. SW cor. SE SE Sec. 26-13n-5e Spd. to 25 ft.; R.U. heavier rig.

Clarke County

Ark.-Miss. Oil Co.'s No. 1 Long Bell, C SW NE Sec. 35-3n-17e. M.I.M.

Ark.-Miss. Oil Co.'s No. 1 State, C SE SE Sec. 16-2n-16e. T. Selma chalk 2,595 ft.; drlg. 4,020 ft.

Copiah County

G. C. Koch's (former Triangle Drilling Co.) No. 1 W. W. Broome, 153 ft. SW cor. SW SE Sec. 1-10n-8e. Drlg. sh. 3,275 ft.

S. J. Wheeless' No. 1 Columbia Mutual Life Ins. Co., C NE-NE Sec. 19-1n-3w. Set 10¾-in. csg. 861 ft.; drlg. bl. sh. 7,390 ft.

Hinds County

Royal Oil & Gas Co. et al's No. 1 Hinds County Land, NE SW NE Sec. 33-5n-2w. Spudded.

Holmes County

Hawkins & Mathews' No. 1 Ellis, C NE SW Sec. 18-14n-4e. Drlg. sdy. sh.

Humphreys County

L. B. Allen's No. 1 R. Clarke, 800 ft. N, 400 ft. E, SW cor. Sec. 4-13n-4w. Drlg. 1,230 ft.

Fohs Oil Co.'s No. 1 Holaday, C SW SW Sec. 5-13n-3w. Spd.; set 10¾-in. csg. Drlg. 5,133 ft.

J. B. Moncrief et al's No. 1 State, 2,490 ft. E line, 150 ft. N line of Sec. 9-15n-2w. Drlg. 3,010 ft.

Rowan Drlg. Co.'s No. 1 Smith, C NW NE Sec. 7-14n-1w. Loc.

Issaquena County

W. G. Ray Drlg. Co.'s No. 1 Irby Charping, approx. C NE NW Sec. 29-10n-8w. Set 13⅜-in. csg. 145 ft.; drlg. 1,721 ft.

Itawamba County

G. C. Grasty et al's No. 1 Ky. Lbr. Co., 1,320 ft. E, 660 ft. S, C Sec. 7-10s-10e. Twisted off D.S.; skd. 24 ft. S and spd.; set 10¾-in. csg. 170 ft.; S.O. 1,500 ft.; T. Trenton L. 1,600 ft.; tstd. sulf wtr. 2,793-97 ft.; U.R. to run csg.; T.D. 2,801 ft.; flwg. sul. wtr. and oil.

Madison County

Ralph Johnston's No. 1 Minerva Young et al, C SE NE Sec. 32-11n-4e. M.I.M.

Love Pet. Co.'s No. 1 Parkinson, C NW NE Sec. 23-9n-1w. Drlg. 3,816 ft.

Monroe County

Willmut G. & O. Co.'s No. 1 Roberts, NW¼ Sec. 18-13s-17w. D.S.T. 2,410-30 ft.; Amory gas zone, dry; S.G. 2,844-52 ft.; hard cmtd. sd., odor oil 2,821-72 ft.; D.S.T., no results; ran Schlumberger and set 7-in. csg. 2,810 ft.; T.D. 2,879 ft.; flwd. small amt. gas and bailed to bttm.; shot with 150 gal. nitroglycerin; bailed dry, made some gas; R.U.C.T. to deepen.

Oktibbeha County

Oktibbeha Oil & Gas Co.'s (Nick Shiarella) No. 1 L. L. Murphy, NE NE NW Sec. 28-17n-12e. Set surf. csg.; W.O.C.

Scott County

E. L. Martin's No. 1 Adams Edgar Lbr. Co., C S½ SE SW Sec. 25-8n-6e. Loc.

Smith County

Haynes B. Owenby Drlg. Co.'s No. 1 State, C SE NE Sec. 6-2n-9e. Loc.

Stone County

H. I. Morgan's No. 1 Dantzler Lbr. Co NW SE Sec. 8-4s-12w. Drlg. ch. 6,415 ft.

Warren County

H. C. Cummings et al's No. 1 T. H. Morrissey, C E½ W½ NE Sec. 8-17n-2e. T.D. 5,725 ft.; S.D. fuel.

Yalobusha County

Robert Brian's No. 1 Walker, Sec. 15-11n-5e. Bldg. drk.

Stewart Oil Co.'s No. 1 Ruth H. Creekmore, C SW NE Sec. 21-24n-7e. T. Eutaw 1,640 ft.; drlg. 2,870 ft.

Yazoo County

Exchange Oil Co.'s No. 1 L. B. Dixon, C SW SW SW Sec. 29-12n-3e. Loc.

Hassie Hunt's No. 3 A. G. Johnson, C NW NE Sec. 14-10-3. Missed Woodruff sd.; T.D. 4,906 ft. Eutaw; prep. tst.

Edgar Johnston's No. 2-B Brumfield, C NE SE Sec. 2-10-3. Set 10¾-in. csg. 620 ft.. drlg. bl. sh. 4,473 ft.

J. R. Lockhart et al's No. 1 Frank Brooks, W½ SE NW Sec. 17-10-2w. T. chalk 4,964 ft.; T. sd. 5,047 ft.; cd. 5,051-65 ft.; cores rec. 5,047-51 and 5,110-25 ft.; showed salty taste; wpstkg. by bit cones 5,236 ft.

Sells Pet. Co.'s No. 1 Falkner, C SE NE Sec. 34-9n-4w. M.I.M.

Slick-Urschel Oil Co.'s No. 4 T. B. Slick, 440 ft. W, 660 ft. N, SE cor. NE Sec. 2-10-3. Set 10¾-in. csg. 634 ft.; drlg. ch. 4,677 ft.

Union Prod. Co.'s No. 1 Cesana, C NW SW Sec. 18-10-2. R.U.

Union Producing Co.'s No. 1-A Friley, C SE SE Sec. 14-10-3. T.D. 4,570 ft.; Eutaw sh.; missed Woodruff sd.; Stevens sd. 4,903-17 ft.; T.D. 4,961 ft.; completing.

Union Prod. Co.'s No. 1 Ada Partridge, C SW SE Sec. 1-10-3. Drlg. sh. and sd. 2,271 ft.

Union Prod. Co.'s No. 4 Perry, C SW NE Sec. 24-10-3. Set 16-in. csg. 50 ft.; Stevens sd. 4,886-4,906 ft.; Stevens sd. 4,944-63 ft.; stray sd. in Eutaw 4,976 ft.; D.S.T. 4,970-5,080 ft.; ⅝-in. cks. top and bttm.; rec. 2,100 ft. S.W. and drlg. mud cut with oil; cd. sd. in Tuscaloosa 5,570-90 ft. showing oil.; D.S.T. 5,545-90 ft., ⅝-in. cks. top and bttm., rec. 560 ft. heavy oil and 720 ft. oil and S.W. in 10 min.; T.D. 6,133 ft.; set 7-in. csg. 5,035 ft.; perf. 4,980-90 ft.; tstd. 500 ft. mud and oil, 450 ft. oil, 1,400 ft. s.w. and oil and 2,400 ft. s.w.; sqzd. and drld. out cmt. 4,849-4,906 ft.; perf. 4,880-4,900 ft.; completing.

Union Prod. Co.'s No. 1 Ross, NW NW Sec. 14-10-3. Drlg. sh. and bldrs. 4,271 ft.

Union Prod. Co.'s No. 5 Woodruff, C SW SW Sec. 13-10-3. Drlg. sh. 1,017 ft.

ALABAMA

Choctaw County

Union Prod. Co.'s (formerly Joe Modisett et al) No. 1 McCorvey, SE cor. SW SW Sec. 20-9n-2w. O.W.D.D.: O.T.D. 7,520 ft.; reamed to bttm.; recmtd.; T. surf. csg.; cg. ahead 7,755 ft.

GEORGIA

Clinch County

Georgia Resources, Inc.'s No. 1 Gillican, C Land Lot 200, 12th Land Dist. Set 10-in. csg. 736 ft.; drlg. 906 ft.

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the April 11 issue. All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.05
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.75

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

	Signal Hill, California*	Oklahoma, Kansas	Gulf Coast Texas
14-14.9	3.065	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	..	....
19-19.9	.69		$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.13
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.23
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective February 1, 1940.

MISSISSIPPI GEOPHYSICAL MAP

late information

Outline of 185 drilling blocks including KINGWOOD AREA. Geophysical information on 60 major company blocks. Exact center of many shooting pictures, recent locations, dry holes. List of wells carrying oil and gas shows. Complete entire State. Size 48" x 28", Paper $7.75; Cloth $10.00.

NEW ALABAMA GEOPHYSICAL MAP

Paleontology on important wells. All wells showing oil and gas with depth of shows. Operators, elevations. Dry holes. Location of magnetic highs, major faults and geophysical prospects. Size 48" x 28", Paper $7.75; Cloth $10.00.

GEOPHYSICAL INFORMATION SERVICE

1201 FIDELITY BLDG. PHONE 2-5828 DALLAS, TEXAS

In Jackson, Mississippi see R. B. Robinson Map Co.

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended Apr. 20 High	Week ended Apr. 20 Low	Week ended Apr. 20 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1938	Com. sh. earn. 1937	1939 High	1939 Low	1938 High	1938 Low
58½	53	56½	54⅞	55⅝	Amerada Corp.	788,675	N.P.	50cQ	1-31-40	$2.00	$2.07	$3.04	74½	50	78	55
23⅝	20½	23⅝	22	23½	Atlantic Refining	2,663,909	$25	25cQ	3-15-40	1.00	1.40	3.51	24¾	18⅛	27⅝	17⅝
16⅝	13⅝	15½	14⅞	14⅞	Barber Asphalt Co.	390,223	$10	25c	2-20-40	.25	—.85	1.91	21	10¼	23¾	12⅛
13⅝	10⅜	11⅝	11⅛	11½	Barnsdall Oil Co.	2,250,344	$5	15c	3-9-40	.90	1.26	.85	19½	11⅛	21⅝	10⅛
8⅛	7	7⅝	7⅜	7⅜	Consolidated Oil Corp.	13,751,846	N.P.	20cQ	5-15-40	.80	.55	1.48	9⅞	6½	10⅜	7
25	22⅛	23½	22⅝	23½	Continental Oil of Delaware	4,682,581	$5	25cQ	3-25-40	1.00	1.10	2.98	31½	19⅞	35¾	21¼
6⅞	5½	5¾	5½	5½	Houston Oil	1,098,618	$25	....	10-17-36		.83	.94	9¾	4½	9¾	5
13½	11¾	13	12⅝	13	Lion Oil Refining	435,815	N.P.	25cQ	4-1-40	1.00	2.09	2.17	18⅛	10	25½	15⅝
16⅜	13⅜	15⅞	15¼	15½	Mid-Continent Petroleum	1,857,912	$10	40c	6-1-40	.60	.56	2.86	18	11⅛	22⅝	12¼
11	9½	10¼	9⅜	10¼	Mission Corporation	1,379,245	$10	40c	12-15-39	.65	1.04	1.31	14⅞	8⅜	17⅜	10⅝
9⅜	7⅝	8⅜	7⅝	8	National Supply	1,155,517	$10	....	12-22-37	....	—.79	4.90	15½	5⅝	23	12½
8	6½	7⅞	7⅛	7⅞	Ohio Oil Co.	6,563,377	N.P.	20c	12-15-38	....	.25	1.30	10½	6	14⅞	8⅞
8¼	7	7⅜	6⅞	7⅜	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	.40	1.22	1.39	11⅞	7	15⅞	10¼
8½	6⅜	8¼	8¼	8¼	Pan American Pet. & Trans.	4,702,945	$5	....	12-31-37	....	.08	1.18	8⅜	5	9¼	6¼
41¾	36½	39	37⅝	38¼	Phillips Petroleum	4,449,052	N.P.	50cQ	3-1-40	2.00	2.03	5.42	46½	31¼	44⅜	27¼
22⅜	20½	21⅜	21	21	Plymouth Oil Co.	1,006,200	$5	35cQ	3-30-40	‡1.40	2.59	2.85	24	17⅛	25⅜	15
11¼	8½	11¼	10⅜	11⅛	Pure Oil Co.	3,982,031	N.P.	25c	12-20-39	.25	.38	2.15	11⅜	6⅛	13½	8¼
8⅜	6⅜	7¼	7	7	Richfield Oil Corp.	4,010,000	N.P.	50c	12-18-39	.50	.51	.35	10¼	6⅝	9⅞	5
20	17⅞	18⅜	18	18	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	3-15-40	1.00	1.52	1.97	24⅜	15½	27½	15½
13⅛	10⅜	13	11⅜	13	Shell Union Oil	13,070,625	N.P.	25c	12-20-39	.50	.72	1.44	17¼	9⅜	18⅜	10
22⅝	18½	21⅜	20	20	Skelly Oil	995,349	$15	25c	1-30-40	.75	2.27	6.07	29½	15½	34⅜	18½
12½	10⅞	11½	10⅞	11	Socony-Vacuum	31,206,071	$15	25cSA	3-15-40	.50	1.29	1.82	15⅛	10¼	16⅜	10⅜
26⅛	22⅜	23⅜	22⅜	22⅝	Standard Oil of California	13,004,153	N.P.	25cQ	3-15-40	1.10	2.22	3.17	33⅝	24¼	34⅞	25⅛
29	25	27⅞	26½	27⅝	Standard Oil (Indiana)	15,272,020	$25	25c	3-15-40	1.25	1.82	3.66	30	22⅜	35½	24⅜
46½	40	42½	40	40⅝	Standard Oil of New Jersey	26,618,065	$25	75c†	12-15-39	‡1.25	2.86	5.64	53½	38	58⅜	39⅜
63⅝	56¼	63⅛	62	62	Sun Oil	2,316,484	N.P.	25c*	3-15-40	1.00	1.07	3.86	66	45¾	65⅛	45
2½	2	2⅛	2	2	Superior Oil Corp.	1,388,979	$1	10c	12-28-38	....	.24	.32	3⅝	1⅜	4¼	1¾
47⅝	42⅜	47½	45¼	46	Texas Corp.	10,876,882	$25	50cQ	4-1-40	2.00	2.13	5.02	50¾	32½	49⅝	32⅝
4¼	3½	4	3⅜	3⅜	Texas Gulf Producing Co.	888,146	N.P.	10c	6-15-40	.20	.86	.68	5⅜	3¼	5⅞	2⅝
8⅝	7½	8⅜	7⅞	8⅛	Texas Pacific Coal & Oil	888,236	$10	10c	3-1-40	.40	1.16	1.11	11⅝	7	12½	7
11⅝	10	11⅝	10¼	11½	Tide Water Associated	6,375,253	$10	15c	3-1-40	.80	1.28	2.08	14¼	9½	15⅜	10⅛
17½	16	16⅜	16⅛	16½	Union Oil Co. of California	4,666,270	$25	25c	5-10-40	1.05	1.47	2.58	19⅜	15⅛	22½	17⅛
27¼	22⅜	26⅜	26⅜	26⅜	Union Tank Car Co.	1,177,381	N.P.	40c†	3-1-40	1.30	1.16	1.70	24¼	20⅛	23½	20
3⅝	2⅞	3⅛	3	3	Wilcox Oil & Gas	487,568	$5	10c	2-15-40		.52	.24	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 4 per cent in stock. ‖Also 2½ per cent in stock. ¶Also 1½ per cent in stock. —Deficit.

New York Curb Exchange

1940 High	1940 Low	Week ended Apr. 20 High	Week ended Apr. 20 Low	Week ended Apr. 20 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1938	Com. sh. earn. 1937	1939 High	1939 Low	1938 High	1938 Low
8⅞	6⅛	8½	7⅝	8¾	American Republics Corp.	1,308,049	$10	10c	7-11-38	....	—$0.22	$0.27	11¾	5½	11¾	5
3¼	2⅛	3	2⅛	2⅜	Bridgeport Machine Co.	270,000	N.P.	$1.25	12-30-37	....	—.14	1.90	7¼	2½	10¼	4⅜
43	28	39	38¾	39	Buckeye Pipe Line Co.	200,000	$50	$1	3-15-40	$2.50	2.36	4.02	34¾	26½	39	22½
117	110	116½	116½	116½	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	3-29-40	6.00	5.32	6.73	130	108⅝	128	97
5½	4	5¼	4⅜	5	Cities Service (new)	3,704,067	$10	....	6-1-32	....	.23	1.02	9¼	4¼	11	5½
2⅛	1⅛	2	1⅞	1⅞	Cosden Petroleum	462,551	$1	....	....	....	....	.19	2¼	½	2⅜	⅞
22⅜	19¾	22⅜	20¾	22⅛	Creole Petroleum	6,975,383	$5	50cSA†	12-15-39	1.00	1.64	1.61	28	16¾	27½	17½
4⅜	4	4¼	4	4¼	Darby Petroleum	351,390	$5	25cSA	1-15-39	.25	....	1.36	7⅛	3⅝	10¼	5½
2	1½	1½	1½	1½	Derby Oil & Refining	263,162	N.P.	....	....	....	—.91	1.34	2⅝	1½	3½	1½
31	23½	..	..	..	Eureka Pipe Line	50,000	$50	75c	5-1-40	2.00	—.37	—.12	23	15¾	31	16
39⅞	34	37⅞	36	37½	Gulf Oil Corp.	9,076,202	$25	25cQ	4-1-40	1.00	1.43	3.51	45⅛	29¼	46⅞	33
68	58	62	59	59¼	Humble Oil & Refining	8,987,840	N.P.	62½c	4-1-40	2.00	3.98	5.22	71	52½	72⅝	56
12⅜	9⅝	10¼	9⅝	9⅞	Imperial Oil of Canada	26,965,078	N.P.	37½c†	12-1-39	1.00	.96	.98	17	11⅜	19½	14⅛
7⅜	5¾	7⅝	7⅛	7⅝	Indiana Pipe Line	300,000	$10	10c	5-15-40	.50	.47	1.03	7¼	5½	9⅜	6
19⅜	15¼	16⅜	15¼	15¼	International Petroleum	14,324,088	N.P.	75c	12-1-39	1.75	1.98	....	27½	17	31¼	21
2⅜	2¼	..	..	..	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.14	.17	3¾	2⅛	5	2⅛
10⅜	9⅝	9⅞	9⅝	9¾	Lone Star Gas	5,553,747	N.P.	20c	4-22-40	.70	.88	1.14	10½	7⅛	10⅜	6⅝
6¼	5	5⅞	5⅝	5⅝	Louisiana Land & Exp.	2,977,449	$1	10c	3-15-40	.35	.45	.58	7¾	4	9⅜	6½
17	11½	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	4-10-40	1.00	2.28	3.26	17	14½	24	16
8⅛	7¼	8	7¾	7¾	Midwest Oil Co.	998,474	$10	45c	12-15-39	.90	.93	1.14	8¾	6⅝	9¾	6⅝
6¼	5¼	6⅛	6	6⅛	Mountain Producers	1,593,584	$10	30cSA	12-15-39	60	.62	.76	6	4⅞	5⅝	4½
13⅛	12	12¼	12	12¼	National Fuel Gas	3,810,183	N.P.	25cQ	4-15-40	1.00	.84	.96	14	11¼	14⅝	11⅛
12½	8¾	12½	11½	11½	National Transit	509,000	$12.50	50c	12-15-39	.85	.88	1.19	9½	7¼	9¼	6⅛
1¼	1	1⅛	1⅛	1⅛	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1⅜	1	2⅝	1½
7¾	5¼	7¾	7	7	New York Transit	100,000	$5	25c	4-15-40	.40	.16	.49	6	4	4½	3½
9⅞	6¾	9⅞	9	9½	Northern Pipe Line	120,000	$10	15c	12-1-39	.30	.24	.78	7	4½	6	4
5½	4½	5⅛	4½	4⅞	Pantepec Oil	2,857,000	$1	....	....	....	....	....	7⅝	4	7⅜	3½
3¼	2¼	2⅜	2⅜	2⅜	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.17	—.17	5	1¼	4½	1⅝
2¼	1⅞	2⅛	2	2	Ryan Consolidated	298,931	N.P.	....	....	....	.29	.46	3	1⅞	4	2⅛
11¾	4⅞	10⅝	9½	9⅝	Southern Pipe Line	100,000	$10	15c	3-1-40	.30	—.27	.85	4⅞	3½	5⅜	3¼
44	37½	39½	39	39	South Penn Oil	1,000,000	$25	37½c	3-29-40	3.00	1.44	4.64	40½	26¾	39	28⅝
35	22	24	24	24	Southwest Penna. Pipe Lines	35,000	$50	$5	4-1-40	2.00	—.41	.95	23	18	22¼	16½
20⅞	20	20½	20½	20⅝	Standard Oil of Kentucky	2,604,790	$10	25c	3-15-40	1.30	1.45	1.60	20⅛	17¼	18⅜	15
37½	28¾	36	35¼	36	Standard Oil of Ohio	753,740	$25	25c	3-15-40	1.50	1.81	3.67	32¾	17	22¾	16¼
2	1⅜	2	1⅞	2	Sunray Oil	2,007,076	$1	5c	5-1-40	.10	.23	.42	2⅜	1⅜	3¼	2
2⅜	2½	2⅜	2⅜	2⅜	Texon Oil & Land	936,024	$2	10c	3-29-40	.10	.56	.51	4	2⅜	5¼	3½
3⅜	2¼	2½	2½	2½	Transwestern Oil Co.	750,000	$10	....	....	....	—.12	.48	6	2½	7⅝	4¼
2⅛	1¼	1½	1⅜	1⅜	United Gas Corp.	7,818,959	$1	....	....	....	—.51	.25	3⅜	1½	5¼	2⅝

†Includes extras. —Deficit.

Personal Paragraphs

J. E. SKEHAN, of New York, has been made manager of all domestic sales divisions from Maine to Louisiana for marketing subsidiaries of Standard Oil Co. of New Jersey.

AL BUCHANAN, president of Buchanan Drilling Co., and vice president of the South Texas Chamber of Commerce, was specially honored at the third annual Oil Men's Jubilee of the chamber at San Antonio, Tex., April 19, for his part in developing the oil resources of the section. He received an inscribed silver scroll. Tributes were paid by John R. Suman, vice president, Humble Oil & Refining Co.; H. B. Fell, executive vice president, Independent Petroleum Association of America, and others.

JOE ADAMS, chief scout for Humble Oil & Refining Co., at Corpus Christi, Tex., has been transferred to Lake Charles, La.

FRANK GROTEY, of Heyser & Heard, Corpus Christi, Tex., is now doing his traveling by air since he has purchased a new airplane.

RICHARD L. SAVAGE, production department, Standard Oil Co. of Venezuela, has been transferred from Caripito to Caracas, Venezuela.

FORSYTH WICKES, of New York, has been elected a director of Shell Union Oil Co., it was announced at last week's annual meeting of the company.

BOB HUFF, Pampa, Tex., has been appointed deputy supervisor for the Pampa office of the Texas Railroad Commission. He succeeds JACK DUNN.

ELMO THOMPSON, executive vice president of Sunray Oil Co., has been nominated for a place on the board of directors of the Vanderbilt University General Alumni Association.

DARWIN KIRK, counsel for Barnsdall Oil Co., was elected a delegate to the Republican National Convention, Philadelphia, Pa., representing the first congressional district of Oklahoma.

C. E. TERRELL, production engineer for Pure Oil Co. at Tulsa, has been transferred to the Chicago office. His place in Tulsa is being taken by W. M. SAXON, from Chicago.

J. ROBY PENN, president of Texas Pacific Coal & Oil Co., Fort Worth, Tex., has begun his fourteenth year in that capacity.

J. W. BURGESS, formerly engineer with Shell Pipe Line Co., has been transferred to the New York office of Shell Union Oil Corp., where he has been promoted to the position of manager of the pipe-line division of the New York district.

ALBERT F. RICHARD, former secretary and treasurer of Big Indian Oil & Development Co., Kansas City, Mo., has been elected president and manager. WALTER G. FLETT remains vice president, and GEORGE E. McDONALD, accountant and board member, was elected secretary-treasurer.

WILBURN PAGE, former vice president and general manager of the Wichita Falls Chamber of Commerce, was chosen executive secretary of the Permian Basin Association to succeed H. B. Spence, who was fatally injured in an automobile accident in Odessa.

GEORGE H. CARD, chief engineer for Stanolind Oil & Gas Co. at Fort Worth, Tex., was elected president of the Petroleum Engineers Club of Fort Worth at an organization meeting held last Friday night in that city. Other officers elected for the new group were W. F. HERBERT, division petroleum engineer for the Texas Co.; R. S. CHRISTIE, division petroleum engineer of Amerada Petroleum Corp.; R. W. NICHOLS of Black, Sivalls & Bryson, Inc., all vice presidents; and CLYDE ROBINSON, division petroleum engineer for Gulf Oil Co.

GRADY T. CHUPP, American petroleum engineer, returned last week from an assignment in Yugoslavia and said Rumania is prepared to sabotage all oil wells in that country in the event of an invasion of the Balkans. He said the determination to render the Rumanian petroleum resources impotent in the event of invasion by Germany or Soviet Russia extended to the refining branch of the industry as well as the producing fields and the transportation network. He returned aboard the Italian liner Saturnia after a 12-year stay in the Balkans. He was accompanied by Mrs. Chupp and their daughter.

RICHARD STORM, Sinclair Prairie Oil Co. engineer, has been transferred from Breckenridge, Tex., to Wink, Tex.

E. B. DOZIER, assistant division chief clerk for Humble Oil & Refining Co. at Midland, Tex., has been appointed division transportation foreman.

W. B. RAPER has been placed in charge of a geophysic and gravimeter crew which is making a survey of the Mirando, Tex., district for Magnolia Petroleum Co.

R. S. RANDERSON, independent operator formerly located at San Antonio, Tex., has opened offices at Houston, Tex., where he will operate as Randon Oil Co.

WILLIAM G. SKELLY, president of Skelly Oil Co., announced last week that he would not seek the post of national Republican committeeman from Oklahoma, which he has held for a number of years.

D. L. GIRSHAM of Digbohi, Assam Province, India, arrived in Tulsa last week and will remain to attend the International Petroleum Exposition May 18-25. He is connected with the operating department of the Assam Oil Co., an affiliate of the Burma-Shell interests.

ELMER F. SCHMIDT, executive vice president of Lone Star Gas Co., Dallas, Tex., and chairman of the Natural Gas Section of the American Gas Association, was the speaker at the meeting of the Missouri Association of Public Utilities at Excelsior Springs, Mo., last week.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Prairie Oil & Gas Co. and Prairie Pipe Line Co. are planning the erection of a large office building in Independence.

The estate of James McDonald, Standard Oil magnate, who died in Washington in January, has been conservatively appraised at $3,762,860.75.

Electric heaters placed at the bottom of wells in one California field are said to increase production according to a Wyoming mining trade journal.

20 YEARS AGO

Sir John Cadman regrets that drillers are not all scientifically educated as oil technologists.

The Claiborne field in North Louisiana is producing 87,000 bbl. per day.

Ranger, Tex., has become such an orderly oil town that the services of six policemen have been dispensed with in the past 6 months.

Texas Gulf Coast and Louisiana Oil and Gas Associations adopt a resolution calling for what approximates a 46 per cent increase in the rate of pay of oil-field workers, including drillers, and an 8-hour workday. W. S. Farish headed the committee that made the report. Other members include J. C. Wilson, W. L. Connolly, C. K. Clark, C. O. Noble, T. P. Lee, M. B. Sweeney, C. D. Keen, R. E. Brooks, E. I. R. Bordages, and Underwood Nazro.

10 YEARS AGO

Forty-four wells in the Oklahoma City field are producing 144,857 bbl. per day, an average of 3,292 bbl. per well.

F. E. Rice, H. A. Trower, and C. R. Musgrave have been elected vice presidents of Phillips Petroleum Co.

E. E. LeMasters, general superintendent of the Oklahoma Pipe Line Co., dies in a Battle Creek, Mich., sanatorium.

CHARLES E. HEWITT, scout in the Greater Seminole field for Mid-Continent Petroleum Corp., has been transferred to Wichita Falls to cover North Texas.

VICTOR LIEB, formerly with Western Gulf Oil Co., Houston, Tex., has resigned and is now associated with Haven Oil Co. with headquarters at Houston.

W. L. JAMES, purchasing agent, Stanolind Oil & Gas Co., Tulsa, district vice president of the National Association of Purchasing Agents, has returned from a visit in Houston, Fort Worth and Dallas, Tex.

DR. JOHN J. MULLANE, engineer, research department, Carter Oil Co., has been transferred from Tulsa to Illinois where he is conducting studies in the Louden field with the pressure core barrel which has been developed by his company.

WALTER F. G. STEIN, district engineer for the Texas Railroad Commission at Corpus Christi, Tex., has resigned, and has formed a partnership engineering company with W. C. ANDERSON, who was also formerly with the Railroad Commission.

C. H. WILSON, district chief clerk for Humble Oil & Refining Co. in the Wasson district, Texas, has been transferred to the Hurdle district, replacing G. R. VAN LANDINGHAM, district chief clerk, who has been transferred to the Wasson district.

PAUL POTTER, chief scout for Shell Oil Co., Inc., at Tulsa, was in Wichita Falls and other Texas points last week, looking over the new activity in that part of the Mid-Continent and planning a thorough coverage of the district for his company.

Fifty Years of Service

Fifty years in the oil industry was signalized Tuesday evening of this week when 60 friends and associates of P. H. Curry, president of the South Penn Oil Co., attended a testimonial dinner given at the William Penn Hotel, Pittsburgh, Pa., by members of the South Penn's board of directors. The guest list included men in the oil and allied industries from New York to San Francisco.

P. H. CURRY

A bound book presented to Mr. Curry contained letters from persons with whom he has been associated in the half century. A silver tray engraved with facsimile signatures of 71 officers and superintendents of the South Penn Oil Co., South Penn Natural Gas Co., Pennzoil Co., and Bradford Transit Co. was another gift. Officers of the Bradford Transit Co. presented a watch.

Mr. Curry entered the oil business April 8, 1890, when he began work as a stenographer in the South Penn's purchasing department in Oil City, Pa. Except for a short period during which he was with the Ohio Oil Co. he has been in South Penn's service continuously. In 1902 he became assistant treasurer of the company's Midland division, and he was made treasurer 5 years later. In 1916 he was elected to the board of directors. In 1918 he was advanced to the vice presidency and made manager of the Midland division. He was elected president December 19, 1932. He has resided in Pittsburgh since 1916. Mr. Curry was active in the development of water flooding and became an authority.

KEMP BARLEY, formerly with the production department of Gulf Oil Corp. at Chase, Kans., is now with Halliburton Oil Well Cementing Co.

E. M. JONES, assistant district chief clerk for Humble Oil & Refining Co. in the Hobbs, N. M., district, has been promoted to district chief clerk.

R. D. ROBEY, of Robey Drilling Co., recently purchased a 900-acre ranch near Garnett, Okla., and is spending such time as he can spare from the drilling business in reconditioning it.

WARREN SPARKS, attorney with Phillips Petroleum Co. in its Amarillo, Tex., office, underwent an appendectomy at an Amarillo hospital last week and was last reported making a fine recovery.

A. J. BEDFORD, district chief clerk for Humble Oil & Refining Co. in the Hobbs, N. M., district, has been transferred to the West Texas division as assistant division chief clerk.

A. JACOBSON, president of Amerada Petroleum Corp., New York, has completed a field survey of the company's properties in Texas, New Mexico and Oklahoma and visited Tulsa for a conference with officials at the company's operating headquarters before returning east.

WALTER W. FLEMING, of the Tulsa office, vice president of Ohio Oil Co. in charge of Mid-Continent operations, was one of the 15 in the United States awarded a gold service emblem studded with two jewels, token of 30 years' service. C. B. SIMON, cashier, also received one of the 30-year emblems.

HENRY ZWEIFEL, president of Cosden Petroleum Corp., Fort Worth, Tex., announced last week that he would retire as active president of the company but would remain as general counsel. The Cosden corporation has also announced it will move its offices from Fort Worth to Big Spring, Tex. This shift brings several changes in personnel. A. V. KARCHER, Dallas, Tex., and formerly associated with the Federal Bureau of Investigation, has been elected secretary of the firm. RAYMOND L. TOLLETT, formerly secretary-treasurer of the firm, was elected executive vice president and made a director.

LEE R. SLATER, formerly general superintendent of the old Independent Oil & Gas Co. until it was taken over by Phillips Petroleum Corp. and then general superintendent of Darby Petroleum Corp., has become associated with Anderson-Prichard Oil Corp. in the West Texas and New Mexico area. He at one time drilled a cable-tool hole on Graham Island, British Columbia, when the volcanic eruptions in Alaska sprayed the volcanic ash like snow over the island. He also spent some time in Mexico as well as Pennsylvania, Ohio, Kansas, Oklahoma, Texas, and the Mid-Continent field. He is a native of Butler County, Pennsylvania.

JOHN M. LOVEJOY, president of Seaboard Oil Co., prophesied at the annual meeting of stockholders that the oil industry is going to have a reasonably good year, "a little better than last."

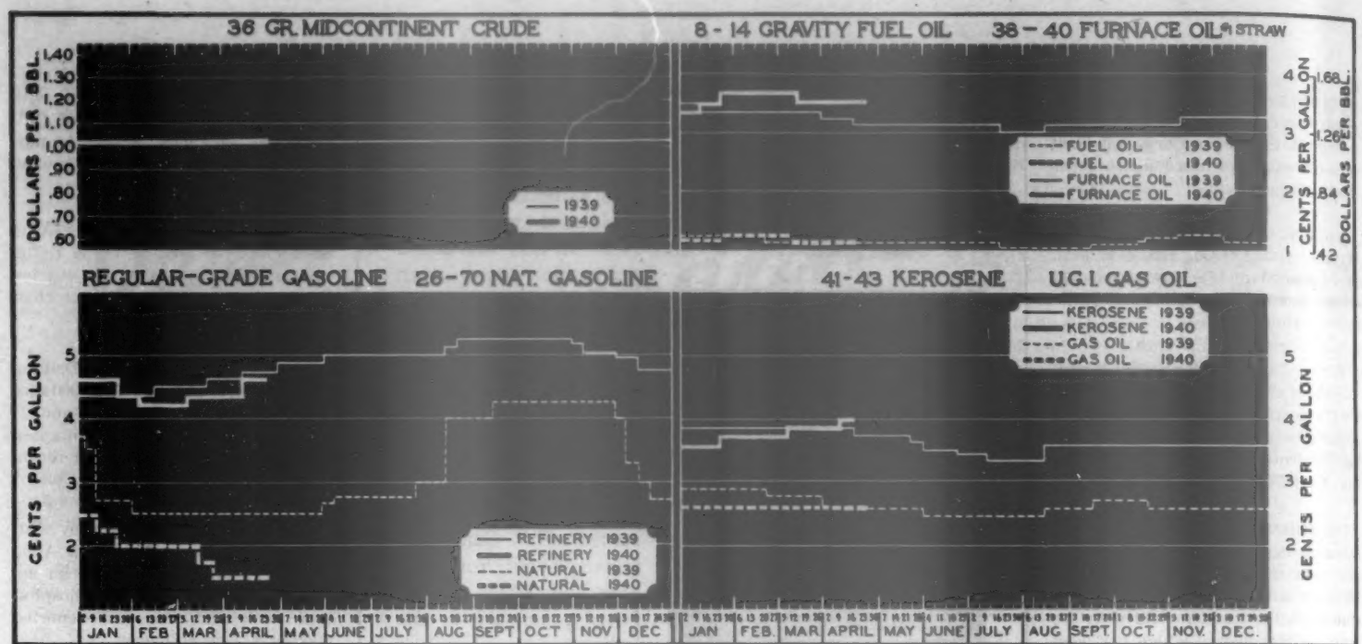
C. R. DOOLEY, of New York, industrial relations manager for Socony-Vacuum Oil Co., Inc., will speak on "Merit Rating of Employes" at the spring meeting of the American Society of Mechanical Engineers in Worcester, Mass., May 1.

E. E. BROWN, general superintendent of tools for Manning & Martin, Inc., drilling contractors, has returned to Denver headquarters from a trip to Honolulu. A. B. COBB, well-known Montana producer, also returned from Honolulu on the same boat.

PAT BROACH, of the crude purchasing division of the Standard Oil Co. of Indiana, is chairman of the arrangements committee for the annual spring frolic of the Kansas Oil Scouts Association. Assisting him are BOB CLARK, Tide Water Associated Oil Co.; STEVE POWELL, Atlantic Refining Co., and JIM SMITH, Pure Oil Co. A. W. MONTGOMERY, White Eagle division of the Socony-Vacuum Oil Co., is president of the association.

GLEN RUBY, who went to South America 2 years ago to become chief geologist for Yacimientos Petroliferos Fiscales, Argentina, with headquarters at Buenos Aires, stopped off in Denver, Colo., on his way back from convention of the American Association of Petroleum Geologists at Chicago to renew old friendships.

Shifts: A. W. THOMPSON, president, Mandeville-Thompson, Inc., from La Porte, Tex., to Houston, Tex.; C. A. HILL, superintendent, Magnolia Petroleum Co., from Mirando City, Tex., to Alice, Tex.; ARTHUR C. BOYCE, vice president, Darby Petroleum Corp., from Miami Beach, Fla., to Monterey, Mass.; H. L. ARMSTRONG, engineer, Texas Empire Pipe Line Co., from Wilmington, Ill., to Normandy Beach, N. J.; J. D. TURNER, geologist, Carter Oil Co., from St. Elmo, Ill., to Mattoon, Ill.; C. K. JORDAN, engineer, Continental Oil Co., from Forest, Miss., to Meridian, Miss.; HAROLD L. COPELAND, geologist, Carter Oil Co., from Jackson, Miss., to Meridian, Miss.; V. T. DONNELLY, foreman, R. H. Ray, Inc., from Jackson, Miss., to Meridian, Miss.; LEO W. KONZ, engineer, Carter Oil Co., from Jackson, Miss., to Meridian, Miss.; W. W. BAKER, vice president, Sinclair Prairie Oil Co., from Tulsa, Okla., to Corpus Christi, Tex.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Kerosene and Tractor Fuels Provide Modest Strength in Group 3 Area

By T. F. SMILEY

KEROSENE and the tractor fuels this week afforded a ray of sunshine that filtered through to the Group 3 refinery market, where sunshine was needed. Rising demand for gasoline was a favorable development, but it was not enough to overcome the oppressive influence of huge over-accumulation, and prices stayed where they were.

Kerosene, which had been increasingly firm for weeks, became actually scarce, and quotations moved up. This was the case with the tractor fuels also, in spite of the fact that adverse weather conditions hindered farm operations. Tractor fuels of 40-42 and 41-43 gravity went up an eighth, and the 46-48 acted as though it might go higher too.

Stocks Leveling Off

Refiners got a bit of comfort out of the fact that the nation's gasoline stocks, though still towering ominously above requirements, had begun to level off, instead of leaping to new highs each week. There was reason for particular gratification in the fact that Mid-Continent refiners led in the movement toward lower inventories. Stocks in that area dropped 275,000 bbl. in the week ended April 13, compared with a decline of only 108,000 bbl. in the country's total. If it had not been for the substantial shrinkage in the Mid-Continent and California the total figures would have recorded continuation of the climb which has weakened the whole gasoline market. Stocks on the East Coast rose 494,000 bbl. and those in the Middle West 270,000 bbl.

Oklahoma refiners said orders and shipping instructions were coming in at a faster rate, but the fly fluttering in the ointment was the fact that prices, which under normal conditions would be pointing definitely upward at this season, were still chained to low levels. There was less willingness to grant concessions on the higher-octane material, but on the other hand bargains in third-grade fuel could be found without overtaxing the eyes. Scattered odd lots could be picked up at 3⅝ cents for resale, it was said. Distillate, obtained from recycling operations and stabilized to 9 lb. vapor pressure, could be purchased at 3⅛ cents, and perhaps even less, according to reports.

This underpriced material, though representing an insignificant percentage of the total changing hands, was making it hard for refiners who were trying to obtain a price that would yield a reasonable profit. One Oklahoma refiner, who has the advantage of a ready crude supply and who disposes of his gasoline (third grade) by truck, said he had been getting an average of 4 cents a gallon, but figured he was losing money on it. Competition made higher prices impossible.

Refined Oil Market Barometer

Although total stocks of gasoline declined, those of East Coast and Middle West rose substantially, and the market remained weak. Kerosene and tractor fuels in active demand. Natural gasoline needs outlets. Higher postings for light fuels in East and California point to improved position. Movement of lubricating oils increasing, but prices softer. Wax holding.

MID-CONTINENT. Gasoline soft. Tractor fuels up. Kerosene stronger. Naturals dull.

EAST COAST. Gasoline quiet. Consumption of light fuels in seasonal decline.

GULF COAST. Gasoline inactive. Kerosene firm. Offerings of residual fuel oil freer.

PENNSYLVANIA. Gasoline slow. Lubricating oils lose ground. Wax off.

CALIFORNIA. Gasoline weak and sensitive. Fuel oils slightly firmer. Market generally quiet.

CHICAGO. Gasoline holding. Kerosene firm. Call for domestic fuels grows less.

No Recovery in Naturals

The natural-gasoline market, on its back for weeks, showed no signs of ability to get on its feet again. Until congestion at the Gulf is broken up the Texas market for natural will be weak; and so long as the Texas market is weak, prices in Oklahoma are limited by freight differentials. Scarcity of boats, along with the high rates prevailing for such as are available, is an important factor in the plight of the naturals. Manufacturers say coastwise business of consequence could be developed if tankers were obtainable at the rates that existed a year ago. They are watching with interest to see what disposition is to be made of the 260 odd tankers of Norwegian registry which are out of active service for the time being.

Increasing export inquiries for lubricating oils imparted a slightly firmer tone to that division of the market. The turn which the European war has taken in recent weeks suggests likelihood that oversea demand, which caused a spectacular rise in lubricant prices last fall, will be renewed.

Light fuel oils retained their firmness. Range oil, which still is in demand as a tractor fuel, was especially strong. Stocks were in unusually good position. There was substantial movement of wax at unchanged prices. Heavy industrial fuel exhibited signs of softness.

Weather Delays Spring Rise of East Coast Gasoline Market

By H. STANLEY NORMAN

NEW YORK, Apr. 22.—Petroleum markets in the northeastern section of the country last week virtually marked time, being caught in the lull of seasonal change which was not inducive to consumption of any product.

Furnace-oil consumption has again turned downward and probably has had its last bulge until next fall. Rain and threatening weather has so far delayed any real upswing in motor-fuel consumption, although temperatures have moderated from those prevailing during the earlier part of April. Clearing skies will doubtless stimulate week-end automobile driving to the extent that real and substantial reductions will be shortly forthcoming in motor-fuel inventories.

At most points along the North Atlantic seaboard motor-fuel prices of the preceding week have been maintained although one or two sales at slightly under previously reported lows have appeared at Boston and Baltimore. Currently there is emphasis on movement of motor fuel to the points where it will be accessible for consumption with a corresponding curtailment of traffic in furnace oils, frankly to the mental relief of most East Coast refiners. Movement of lubricating oil from refiners' storage to distributors is also reported on a higher level, although prices generally are unchanged.

There was a slight reaction in the New York market to the rather sharp decline earlier this month in scale-wax prices, but they are still 1½ to 2 cents below the highs established during the last part of 1939.

A distributor operating in the New York Harbor area was reported last week to have sold a barge load of 72-74-octane motor fuel to a customer in Brooklyn at 6 cents per gallon, the lowest figure heard in the current decline. There has been talk in the trade, however, for several weeks that barges of regular gasoline, unbranded, were available at 6 cents. Tank-car quotations for 72-74-octane gasoline range from 6.25 to 7.20 cents in New York.

There were no changes worthy of note in the general Gulf Coast market. There were possibly a few more suppliers willing to quote on cargoes of Bunker C fuel oil at 75 cents per barrel, but still, others were asking 95 cents. There were no refiners in the open market, however, who continued to ask as much as $1 per barrel, which was the case 2 weeks ago. Residual fuel-oil consumption has tapered off in the past 4 or 5 weeks about in proportion to the decline in the general business index.

There has been no break whatever in the resistance to export movement of products, with the possible exception of wax and to a less extent against lubricating oils. Exporters reported almost complete lack of interest in foreign purchases of motor fuel, excepting against contracts and shipping instructions have been unaltered even since the more recent spread of fighting to the Scandinavian countries and the threat that it would move into other territories.

Kerosene is approximately holding its market position in the New York area, where the quotations range from 5.8 cents for barge lots to a top of 6.25 for branded material in tank cars. No. 2 fuel oil was reported offered by one or two sellers in the Baltimore and Philadelphia district at 5 cents for barge delivery, but the tank-car price in New York is generally unchanged at a range of 5.3 to 5.6 cents. Observers feel, however, that the tank-car price in New York Harbor will soften rather rapidly with the advent of moderate temperatures. Stocks of light fuel oil, of course, are in good shape and refiners may hesitate to dip their prices until reserves have been improved substantially.

Although January and February were particularly severe winter months this year in New York, taxable motor fuel sold in the state increased 6 per cent over 1939 and totaled 232,802,051 gal. for the 60 days, according to a report released April 19 from the tax commissioner at Albany.

Despite the fact that movement of lubricating oil from western Pennsylvania refiners was reported considerably higher than in recent preceding weeks the price structure was apparently still under pressure on the low side of the market. This was assigned to the lower consumption by certain industrial outlets creating a stronger competitive condition. Declines on certain high-pour-test lubricating stocks ranged around 1 to 1½ cents per gallon on the low side of the market. Other refiners expressed disinterest in competing for that particular class of business and consequently held their quotations at previous levels, apparently feeling that stronger motoring-season demand and an anticipated upturn in offshore shipments would absorb their production. Gasoline of 68-70 octane in barges was reported moving from one Boston supplier to the trade at 6 cents per gallon, but there, too, the general was from 6.5 to 6.75 per gallon. The quotation for 72-74-octane motor fuel at Boston was at 6.25 to 7 cents.

Weakness of the Boston gasoline market was reflected in a reduction of a half cent there in the tank-wagon quotation on April 5 by Socony-Vacuum Oil Co., Inc., lowering the Mobilgas posting to 12 cents to divided dealers, including 4 cents in state and federal taxes. The Socony-Vacuum tank-wagon price was increased 1½ cents per gallon in Burlington, Vt., on April 8, making the new figure there 14.9 cents, including 5 cents in taxes.

The dealer tank-wagon price was lowered 1 cent per gallon on April 15 by Atlantic Refining Co. at Scranton, Pa., making the posting there 14 cents, including 5 cents in taxes. With exception of the scattered points in New England and the local condition at Scranton, Pa., the retail-price structure in this section of the country appears to be on a fairly stable basis.

The price for scale wax at New York gained a tenth of a cent per pound in the reaction that followed the rather sharp reductions of the preceding 2 weeks. Most dealers were asking a minimum of 4.75 cents for scale wax and the fully refined grades were unchanged from the previous week. Export demand has picked up slightly, not to an extent that business is near the record-breaking foreign demand of the last few months of 1939, but sufficient to keep the New York market from drifting into still lower ground.

Lubricating oils for export movement on the New York market were reported down 1 to 3 cents per gallon on the low side of the market range. This movement is apparently in sympathy with the lack of export movement which in turn is traceable to uncertainties and delays existing in the schedules of boats.

Tanker rates applicable to traffic from the Gulf to North Atlantic ports are practically unchanged. Last-paid prices range from 47 cents per barrel for a cargo of light crude to 70 cents for No. 2 fuel oil.

A. P. I. Weekly Refinery Statistics

Week Ended April 20, 1940

	Capacity reporting (per cent)	Daily crude runs (bbl.)	Total gasoline stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Residual fuel-oil stocks (bbl.)
East Coast	100.0	578,000	23,386,000	5,640,000	8,317,000
Appalachian	91.0	117,000	4,214,000	418,000	630,000
Ind., Ill., and Ky.	88.5	514,000	18,231,000	2,477,000	3,180,000
Okla., Kans., and Mo.	76.9	267,000	8,576,000	973,000	1,854,000
Inland Texas	59.6	114,000	2,033,000	271,000	1,368,000
Texas Gulf	85.3	849,000	15,590,000	3,080,000	5,156,000
Louisiana Gulf	97.6	130,000	2,990,000	836,000	1,027,000
N. Louisiana and Ark.	51.5	33,000	652,000	191,000	424,000
Rocky Mountains	55.5	45,000	1,737,000	144,000	467,000
California	87.3	525,000	18,278,000	9,574,000	78,730,000
Total reported	84.9	3,172,000	95,687,000	23,604,000	101,153,000
Est. unreported	.....	363,000	7,130,000	1,175,000	2,170,000
*Est. total	.....	3,535,000	102,817,000	24,779,000	103,323,000
*Est. total previous wk.	.....	3,570,000	101,837,000	24,237,000	102,595,000
*Apr. 21, 1939	.....	3,280,000	87,381,000	26,261,000	109,136,000

*Bureau of Mines.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended April 13, 1940	252,269,000 barrels
Week ended April 6, 1940	251,897,000 barrels
Week ended April 15, 1939	275,857,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of April 23, 1940

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Chicago, Ill.	15.1	13.1	4.0	10.0
Decatur	15.1	12.1	4.0	9.5
Joliet	15.1	13.6	4.0	10.0
Peoria	15.1	12.7	4.0	10.0
Quincy	14.9	13.4	4.0	9.8
Davenport, Ia.	15.1	13.6	4.0	†10.0
Des Moines	14.9	12.4	4.0	†9.8
Mason City	15.3	13.8	4.0	†10.2
Duluth, Minn.	16.9	15.4	5.0	10.8
Mankato	16.5	15.0	5.0	10.4
Minneapolis	16.5	14.5	5.0	10.4
LaCrosse, Wis.	16.5	15.0	5.0	10.4
Green Bay	16.9	15.4	5.0	10.3
Milwaukee	16.3	14.8	5.0	10.2
Detroit, Mich	13.6	12.1	4.0	7.6
Grand Rapids	13.2	11.7	4.0	9.0
Saginaw	14.8	12.7	4.0	9.3
Evansville, Ind.	16.6	15.1	5.0	†10.5
Indianapolis	16.8	14.3	5.0	†10.2
South Bend	16.8	15.3	5.0	†10.2
Fargo, N. D.	17.7	16.2	5.0	11.6
Huron, S. D.	17.0	15.5	5.0	10.9
Kans. City, Mo.*	14.4	12.9	4.0	8.0
St. Louis*	14.7	12.7	4.0	8.0
St. Joseph	14.4	12.0	4.0	7.9
Wichita, Kans.	13.3	11.1	4.0	7.0

*State tax 2 cents, 1-cent city tax, and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective April 18, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9 cents; 100-149 gal., 8 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7 cents; 400 gal. and over, 6.5 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7 cents; 400 gal. and over, 6.5 cents. Stanolex fuel oil A, 1-399 gal., 5.5 cents; 400-799 gal., 4.5 cents; 800 gal. and over, 4.25 cents. Stanolex fuel oil B, 1-399 gal., 5.5 cents; 400-799 gal., 4.5 cents; 800 gal. and over, 4.25 cents. Stanolex bunker C fuel oil, 1-999 gal., 4.25 cents; 1,000 gal. and over, 3.25 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline			Kero.
	Cons'r tank wag.	Divided dlr.	Incl. tax	tank wag.
Ohio points	15.5	14.5	5.0	*12.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
Atl'tic City, N. J.	11.6	12.7	4.0	8.4
Newark	11.6	12.7	4.0	8.4
Annapolis, Md.	13.35	14.35	5.0	9.5
Baltimore	12.75	13.75	5.0	9.0
Cumberland	14.15	16.15	5.0	10.0
Wash'gton, D. C.	11.00	12.00	3.0	9.5
Danville, Va.	14.95	17.45	6.0	11.5
Norfolk	13.75	16.25	6.0	11.0
Petersburg	14.05	16.55	6.0	11.7
Richmond	14.05	16.55	6.0	11.0
Roanoke	15.25	17.75	6.0	11.5
Charles'n, W. V.	14.55	17.05	6.0	12.6
Parkersburg	13.85	15.35	6.0	11.2
Wheeling	14.85	16.75	6.0	11.8
Charlotte, N. C.	16.90	18.40	7.0	11.8
Hickory	17.45	18.95	7.0	12.3
Mt. Airy	17.30	18.80	7.0	12.2
Raleigh	16.65	18.15	7.0	11.5
Salisbury	16.95	18.45	7.0	11.9
Charleston, S. C.	14.75	17.25	7.0	9.25
Columbia	15.60	18.10	7.0	11.5
Spartanburg	16.30	18.80	7.0	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

Discounts for kerosene, 1 cent off tank-wagon price for 25 gal. or more under contract (contract not necessary in Baltimore), except no discount in New Jersey.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline			Kero.
	Cons'r tank car	Net wag.	Incl. tax	tank wag.
Atlanta, Ga.	18.0	18.0	7.0	11.0
Augusta	17.5	17.5	7.0	10.0
Macon	16.5	16.5	7.0	10.0
Savannah	16.5	16.5	7.0	9.0
Birmingham, Ala.	18.5	18.5	8.0	9.0
Mobile	18.5	18.5	9.0	8.0
Montgomery	19.5	19.5	9.0	9.0
Jackson, Miss.	16.0	16.0	7.0	10.0
Vicksburg	16.0	16.0	7.0	9.5
Jacksonville, Fla.	17.0	17.0	8.0	8.0
Miami	17.0	17.0	8.0	8.0
Pensacola	18.5	18.5	9.0	8.5
*Tampa	21.0	18.0	8.0	6.0
Lexington, Ky.	15.0	15.0	6.0	10.0
Covington	14.5	14.5	6.0	9.5
Louisville	15.5	15.5	6.0	9.0
Paducah	15.5	15.5	6.0	9.0

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

*Temporary discounts to tank-wagon consumers in Tampa 3 cents per gallon below consumer tank-wagon price on Crown gasoline.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
Albany	12.1	14.1	5.0	8.3
*Met. N. Y.: Manhat., Bronx, Queens, Brklyn., Staten Island	12.2	13.3	5.0	8.5
Buffalo	12.6	14.5	5.0	7.9
Rochester	12.8	14.8	5.0	8.5
Syracuse	12.7	14.5	5.0	8.8
Portland, Me.	12.1	14.1	5.0	8.5
Manchester, N.H.	12.7	14.5	5.0	8.9
Burlington, Vt.	12.6	14.9	5.0	8.7
Boston, Mass.	11.0	12.0	4.0	8.5
Worcester	11.6	13.1	4.0	8.0
Hartford, Conn.	11.4	13.3	4.0	8.4
New Haven	11.3	12.3	4.0	7.5
Providence, R. I.	11.0	13.0	4.0	8.5

*Does not include 2 per cent city sales tax, which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Effective February 15, 1939, the company changed its commercial consumer policy in New York and in New England points for tank-wagon delivery to the following: Annual purchases 10,000 gal. and under, tank-car price plus 2 cents per gallon; annual purchases 10,000 gal. up to 50,000 gal., tank-car price plus 1.5 cents per gallon; annual purchases 50,000 to 200,000 gal., tank-car price plus 1 cent per gallon; annual purchases 200,000 gal. and over, tank-car price plus ½ cent per gallon. Private consumers pay undivided dealer price, plus 2 cents per gallon. Private consumers receiving full compartment deliveries of at least 200 gal. receive a discount of ½ cent per gallon.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
Philadelphia, Pa.	12.0	13.5	5.0	10.5
Pittsburgh	13.0	14.5	5.0	10.5
Allentown	13.0	14.5	5.0	10.5
Erie	13.0	14.5	5.0	10.0
Scranton*	12.5	14.0	5.0	10.5
Altoona	13.0	15.0	5.0	10.5
Dover, Del.		13.5	5.0	10.5
Wilmington		13.5	5.0	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

*Voluntary discount of 1 cent allowed to dealers only.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline			Kero.
	Tank truck	Serv. sta.	Incl. tax	tank wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	20.0	21.0	6.0	*17.5
Reno, Nev.	20.5	21.5	5.0	13.5
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	†13.75
Spokane	21.5	22.5	6.0	†16.75
Tacoma	20.0	21.0	6.0	†13.75

*Includes 5-cent state tax. †Includes 0.25-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Denver, Colo.	13.0	...	5.0	10.5
Grand Junction	17.5	...	5.0	12.5
Pueblo	13.0	...	5.0	9.0
Casper, Wyo.	16.5	...	5.0	11.5
Cheyenne	14.0	...	5.0	11.0
Billings, Mont.	18.0	...	6.0	12.0
Butte	18.0	...	6.0	13.0
Great Falls	18.0	...	6.0	12.0
Helena	18.5	...	6.0	12.5
Salt Lake, Utah	15.5	15.5	5.0	14.0
Boise, Idaho	21.1	21.1	6.0	16.0
Twin Falls	21.1	21.1	6.0	16.5
Albu'que, N. M.	13.5	...	6.5	10.0
Roswell	16.0	16.0	6.5	8.0
Roswell	16.0	16.0	6.5	8.0

*Includes city tax of 0.5 cent. †Includes state tax of 1 mill.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
New Orleans, La.	14.75	17.25	8.0	‡11.0
Baton Rouge	14.75	17.25	8.0	‡10.5
Alexandria	14.75	17.25	8.0	‡10.5
Lafayette	15.00	17.50	8.0	‡10.0
Lake Charles	14.75	17.25	8.0	‡12.5
Shreveport	13.50	16.00	8.0	‡9.0
Knoxville, Tenn.	18.00	19.50	8.0	12.5
Memphis	16.00	17.50	8.0	11.0
Chattanooga	17.50	19.00	8.0	12.0
Nashville	17.00	18.50	8.0	11.5
Bristol	18.25	17.75	8.0	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Texarkana, Ark.	13.0	...	5.0	7.0
Fort Smith	14.5	...	5.0	7.5
Little Rock	16.75	...	7.5	8.0
Muskogee, Okla.	13.0	12.0	5.0	7.0
Oklahoma City	11.0	10.0	5.0	6.5
Tulsa	11.0	...	5.0	6.0

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Omaha	16.5	13.5	6.0	9.8
McCook	16.5	13.4	6.0	9.0
Norfolk	16.5	14.4	6.0	9.5
North Platte	17.8	14.9	6.0	10.0
Scottsbluff	18.5	15.5	6.0	10.0

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Dallas, Tex.	12.0	16.0	5.0	7.0
Fort Worth	12.0	16.0	5.0	8.0
Houston	13.5	17.5	5.0	7.0
San Antonio	13.0	17.5	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank wag.	Incl. tax	Kero. tank wag.
Halifax, N. S.	25.0	10.0	19.0
St. John, N. B.	25.0	10.0	19.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	23.5	8.0	16.0
Hamilton, Ont.	23.5	8.0	16.0
Winnipeg, Man.	26.5	7.0	20.5
Brandon, Man.	28.0	7.0	22.9
Regina, Sask.	25.5	7.0	20.5
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. (Kentucky) April 12 reduced tank-wagon kerosene 2 cents in Montgomery.

Standard Oil Co. (Indiana) April 12 reduced dealer gasoline 0.5 cent in St. Louis.

Standard Oil Co. of New Jersey April 15 advanced tank-wagon kerosene 0.5 cent in Baltimore.

Atlantic Refining Co. April 15 reduced tank-wagon kerosene 1 cent in Scranton.

Socony-Vacuum Oil Co., Inc., April 5 reduced dealer tank-wagon gasoline 0.5 cent in Boston; April 8, advanced dealer tank-wagon gasoline 1.5 cents in Burlington.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of April 23, 1940

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 octane and below	.03¾	.03⅞
63-66 octane	.04⅛	.04¼
72-74 octane (regular)	.04⅝	.04¾
60-62 400 grades:		
62 octane and below	.03¾	.03⅞
63-66 octane	.04⅛	.04¼
72-74 octane (regular)	.04⅝	.04¾

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.03¾	.03⅞
63-66 octane	.04⅛	.04¼
72-74 octane (regular)	.04⅝	.04¾
60-62 400	.03¾	.03⅞

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
62 octane and below	.04¼	.04⅜
63-66 octane	.04⅜	.04⅞
72-74 octane (regular)	.05⅛	.05⅜

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
62 octane and below		.04
72-74 octane (regular)		.04¾

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04	.04⅛
63-66 octane	.04⅜	.04½
72-74 octane (regular)	.04¾	.04⅞
60-62 400 grades:		
62 octane and below	.04	.04⅛
63-66 octane	.04⅜	.04½
72-74 octane (regular)	.04¾	.04⅞

PENNSYLVANIA (inland refineries)—

58-62 U. S. Motor		.05
72-74 octane (regular)	.06	.06¼

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.05¾	.07
58-60 400, 65 oct. and higher	.07	.08

EAST COAST (domestic)—

U. S. Motor, 65 and above:		
*New York (Bayonne)	.060	.0690
Philadelphia	.060	.0625
Boston	.060	.0675
Baltimore	.060	.0650
Charleston, S. C.	.065	.0675

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
65-67 octane	.04⅝	.04¾
68-70 octane	.04¾	.05
70-72 octane (leaded)	.05	.05¼

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.01⅛
Grade 18-55	.01¾	.01⅞

NORTH TEXAS—

Grade 26-70		.01¼
Grade 18-55		.01½

CALIFORNIA—

75-85 375-390	.05¾	.06

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.01⅝

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110-flash, 540-550 e.p.	.03¾	.04
41-43 gr., 300-320 l.b.p., 110-125 flash, 500-520 e.p.	.03¾	.04
46-48 gr., 210-230 l.b.p., 480-max., e.p.		.04⅛

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43		.04
42-44		.04⅛

NORTH TEXAS—

41-43		.04

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04⅛

ARKANSAS (Ark. and N. La. del.)—

41-43		.04⅛

PENNSYLVANIA (inland refineries)—

45	.04⅞	.05
46	.05	.05⅛
47	.05⅛	.05¼

CHICAGO (Based on Group 3)—

41-43	.04	.04⅛
42-44	.04⅛	.04¼

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05⅝

NEW YORK (Bayonne, N. J.)—

41-43	.059	.065

***GULF COAST (domestic)—**

41-43	.04½	.04⅝

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03⅜	.03½
No. 2 dark, 32-36	.03¼	.03⅜
No. 3 zero to 10, 28-32		.03¼
No. 3, 15 and above, 28-32	.02¾	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅜	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03	.03⅛

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03¼	.03½

CHICAGO (Based on Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-40	.03⅝	.03⅞
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03⅜	.03½
No. 2 dark, 32-36	.03¼	.03⅜
No. 3, zero to 15, 28-32	.03¼	.03⅜
No. 3, 15 and above, 28-32	.02¾	.02⅞

NEW YORK (Bayonne, N. J.)—

*No. 1	.059	.065
*No. 2	.054	.056
*No. 4	.054	.056

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.02¾	.02¾
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.45	.50

NORTH TEXAS—

U.G.I. gas oil, under 35	.02¾	.02¾
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.45	.50

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.65	.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02⅝	.02⅞
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 10-16	.45	.55

PENNSYLVANIA (inland refineries)—

36-40	.03⅞	.04

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.15	1.25
24 plus diesel, per bbl.	1.15	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.75
10-17 (high sulfur)	.50	.65
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.15	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

GULF COAST—

No. 2 fuel	.03¾	.03⅞
43-47 diesel	.03⅞	.04
48-52 diesel		.04
53-57 diesel	.04	.04⅛
58-and-above diesel	.04¼	.04½
Bunker C (bulk cargoes)	.90	.95
Bunker C (bunkers)	.90	.95

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil	.053	.056
28-30 diesel (lighterage 6¼c per bbl.)	2.20	2.35
28-30 diesel (tank cars)	.05	.056
Bunker C (to ocean-going ships in N. Y. Harbor)		1.50
Industrial fuel (tank cars)	.035	.04

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.26
150-160 D, 0-10		.22
150-160 D, 10-25		.21
100-110 D, 0-10		.21
100-110 D, 10-25		.20
Steam refined:		
600 dark green (untreated)		.07½

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.24½
15 pour point		.23½
25 pour point		.22
Steam refined:		
600	.12	.13
650	.14	.15
600 flash	.16	.17
630 flash	.17	.18

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.11½
180-3		.12½
180-4		.12
200-3		.13
200-4		.12½
250-3		.14½
250-4		.14
280-3		.15½
280-4		.15
300-3½		.16
400-3½		.17
100-2½ paraffin oil		.07
10-25 pour point:		
200-3		.12½
200-4		.12
250-3		.14
250-4		.13½
280-3		.15
280-4		.14½

GULF COAST—

Pale oils:		
200-3	.07¼	.07½
300-3	.07⅝	.08
500-3½	.08½	.09
750-3½	.09	.09½
1,200-3½	.09¾	.10
2,000-4		.10¼
Red oils:		
200-5-6	.07	.07¼
300-5-6	.07½	.07⅝
500-5-6	.08¼	.08⅝
750	.08¾	.09¼
1,200-5-6	.09⅝	.09⅝

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07½	.08
450-3-4	.07¾	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¾	.11½

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.25½
10 pour point		.24½
15 pour point		.23½
25 pour point	.22	.23
200 vis. at 70° F., 3 color:		
Zero pour point		.27
10 pour point		.26
15 pour point		.25
25 pour point	.23½	.24½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.05	.05¼

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.04¾	.05
124-126 (A.m.p.) w.c. scale	.04¾	.05

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax	.0620	.0630
128-130 (A.m.p.) wax	.0630	.0640
130-132 (A.m.p.) wax	.0640	.0660
133-135 (A.m.p.) wax	.0650	.0680
135-137 (A.m.p.) wax	.0665	.0685
Crude scale:		
124-126 (A.m.p.) w.s.	.0475	.0485
124-126 (A.m.p.) y.s.	.0475	.0485
Petrolatum in barrels, carload lots:		
Dark green	.03125	.03375
Amber	.03375	.03625
Extra amber	.03625	.03750
Lily white	.05750	.06000
Snow white	.06625	.07000
Cream	.04750	.05000

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.04⅞	.05¼
60-62 400	.05	.06¼
61-63 390	.05¼	.06¼
64-66 375	.05⅝	.06¼

LOS ANGELES—

U. S. Motor grades:		
60-65 octane	.05½	.05¾
65-69 octane	.05¾	.06¼
Above 69 octane	.06¼	.06½

KEROSENE

GULF COAST—

41-43 water white	.04½	.04⅝

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered	.19½	.21½
630 S.R. unfiltered	.20	.23½
600 flash, S.R.	.21	.24½
630 flash, S.R.	.26	.28
Bright stock:		
Light, 25 pour point	.29	.31½

NEUTRAL OIL

200-3 color	.31	.32
150-3 color	.29½	.31½

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 A.m.p.		.06⅝
125-127 A.m.p.		.06¾
128-130 A.m.p.		.07
133-135 A.m.p.		.07⅜
135-137 A.m.p.		.08¾
Crude scale:		
124-126 w.s.	.0465	.0475
124-126 y.s.	.0465	.0475

EQUIPMENT PROGRESS...

Redhead Hydraulic Load Distributor Relieves Entire Pumping Unit

The Redhead hydraulic load distributor, introduced at Oklahoma City, Okla., is designed to absorb or break up shocks and vibrations caused by pumping action.

The device is mounted on the carrier bar with a center tube to allow up to 1⅛-in. polished rod to come up through the center. The polished-rod clamp then is placed on the polished rod on top of the load distributor, thus suspending the entire weight of the well on the air contained therein.

The load distributor has a recoiling motion of 3 to 6 in. with each stroke of the beam, depending upon the minimum-maximum load ratio of the well.

Reduction in sucker-rod failure ranging as high as 85 per cent is accomplished after a load distributor is installed, according to the manufacturer. Constant pressure and instant action right with the beam distribute the well load throughout the pumping cycle, assuring an even distribution of horsepower and reduction in peak loads, with a resultant load relief to the engine and the entire pumping equipment.

Installation of a Redhead hydraulic load distributor requires only 20 to 30 minutes, the manufacturer says. A polished-rod clamp and a clamp wrench are the only tools necessary.

The overall height is 32 in., which leaves sufficient room for well spacing. The cylinder contains only compressed air and lubricating oil. The piston below the packing is lubricated through regular Alemite connection.

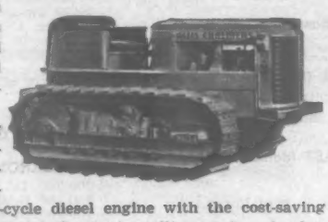
Making, Shaping of Steel Shown

Coincident with the release of "The Making and Shaping of Steel," motion picture depicting operations of United States Steel Corp. subsidiaries, centers for free distribution of the film, have been established at subsidiary company offices in Pittsburgh, Chicago, New York, Birmingham, Cleveland and San Francisco.

The new film tells the story of steel from the time the ore is mined until the finished product leaves the mills. It is offered in seven reels, sound on film, and is available in either 16 or 35-mm. sizes. Each of the seven reels is complete in itself and may be used separately, although the use of the first two reels describing basic operations is recommended in combination with any of the other reels. This picture was made professionally by the same organization that made the corporation's technicolor picture, "Steel—Man's Servant."

New Crawler Tractor Is Companion To Swift and Powerful Model

A new diesel crawler tractor, the HD10, has been introduced by the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., as a companion model to the HD14, known for its high rank as a fast and powerful crawler tractor.



Combining the smoothness and power of the General Motors 2-cycle diesel engine with the cost-saving advantages of Velve-Touch bimetallic steering clutches and brakes, and "Positive-Seal" truck wheels, this tractor is designed to cut operating costs to an absolute minimum. The machine is built complete with extra-heavy crankcase, radiator, and truck-wheel guards, muffler, hour meter, adjustable radiator shutters, bumper, front-pull hook, and electric starting and lighting as standard equipment.

The four-cylinder engine provides 86 belt horsepower and 71.2 drawbar horsepower with drawbar pulls up to 17,600 lb. The tractor is available in two tread widths, 62 and 74 in. The narrow model weighs 19,900 lb. and the wide model 20,700 lb.

Constant-mesh gears permit shifting on the go like a truck with six speeds forward and two reverse. Because the engine can be throttled down to almost half engine speed without losing drawbar pull, a speed range is provided from 1.58 to 5.67 m.p.h. This ability to throttle down in any gear reduces gear shifting and lost time.

Lister-Blackstone Introduces Line Of Space-Saving Power Plants

Powr-Pak, a new line of diesel-electric power plants, ranging in size from 3,600 to 24,000 watts and built to a simple yet revolutionary space-saving design, is being placed on the market by Lister-Blackstone, Inc., 1706 South Sixty-eighth Street, Milwaukee, Wis.

These new plants consist of a radiator-cooled engine, generator, and control panel, all assembled in compact form, ready to set in place and put to work. The chief change from conventional design is in the placement of the generator, which sets directly underneath the engine and thus cuts floor space requirements almost in two.

Power for generating is supplied by the Lister 4-cycle diesel engine, using the Bosch fuel system. To assure long engine life, the cylinder walls are chromium-impregnated by the Listard process. The patented dual-compression system used on Lister diesels, makes starting by hand easy under all temperature conditions, without the use of punks, glow plugs, or any other preheating devices, the manufacturers say.

Generators are available in any desired voltage or current, either d.c. or single or three-phase a.c., for stationary or marine service.

Hose Has Synthetic Tube and Cover

An addition to its line of tank-car and tank-truck hose for handling gasoline and oils is announced by the B. F. Goodrich Co., Akron, Ohio. The new Type 76 SS hose is of light, flexible construction. Tube and cover are made from synthetic rubber, three plies of braided cotton yarn and built-in static wire. Synthetic rubber is used to resist the destructive action of the materials handled. The sizes are 1½, 2, 2½ and 3 in.

LINK-BELT MOVES INTO ITS MODERN NEW BUILDING IN DALLAS

After 5 years of warehouse operation in leased quarters in Dallas, Tex., Link-Belt Co. has opened a new modern plant, warehouse and office building at

500 Latimer Street in that city. The new building is of concrete, brick and steel construction throughout, one story in height, fronting on Latimer Street, 105½ ft. wide and 225 ft. long. The office, at the front of the building, is air-conditioned.

In the warehouse section the latest machine tools have been installed for cutting and keyseating shafting, boring wheels, and performing quickly the many operations which mean so much when equipment is needed in a hurry. Stocks of elevating, conveying and power-transmitting machinery equipment, including oil-well rig drive chains, are carried.

Ground, purchased adjacent to the new building, provides for expansion, and there is a private railroad siding.

AMONG EQUIPMENT MEN...

Meyer in Charge of Houston Area

E. F. Meyer is now in charge of the Houston, Tex., territory for Cutler-Hammer, Inc., manufacturer of electric switches and motor controls. His headquarters are in that city. A graduate of the University of Wisconsin with a bachelor of science degree in electrical engineering, Mr. Meyer joined Cutler-Hammer shortly after leaving school. He began his career in the experimental and testing departments of the company's main plant in Milwaukee, Wis. After becoming acquainted with the design, construction and application of C-H electrical equipment he joined the staff of the Milwaukee district sales office as a sales engineer and from there went to the St. Louis territory.

Schaefer in New Post for Republic

Coordination of pressed steel operations of Republic Steel Corp. and subsidiaries under the general management of Frederick R. Schaefer is announced. Mr. Schaefer, who has been general manager of the Niles steel products division, will have jurisdiction over that division, the Superior division, at Elyria, Ohio, and will also serve as general manager of the pressed steel division of Truscon Steel Co. in Cleveland, Ohio, the position previously held by Harry Woodhead, who resigned to become president of Aviation Manufacturing Corp. Mr. Schaefer, a graduate of the University of Michigan and the Lewis Institute of Technology, was sales manager of Hydraulic Pressed Steel Co. from 1922 to 1929, when it became part of Truscon Steel Co. He joined Niles Steel Products Co., where he became vice president and general manager in 1935. Republic acquired this company in 1937.

Air Reduction Announces Changes

John J. Crowe, formerly manager of the apparatus research and development department of Air Reduction Co., has been appointed assistant to Herman Van Fleet, vice president and operating manager. He will coordinate the activities of the department with similar ones for Wilson Welder & Metals Co., Inc. H. E. Landis, Jr., formerly assistant to Mr. Crowe, has been appointed manager of the apparatus research and development department. C. G. Andrew has been appointed manager of gas plants.

Zorgdrager Advanced by McEvoy

Morey Zorgdrager has been named assistant sales manager for McEvoy Co., with headquarters at the company's main offices in Houston, Tex. An engineering graduate of the University of Colorado, Mr. Zorgdrager started work in the research department of the Gulf Oil Corp. Later he became district field engineer for the Texas Railroad Commission, and in 1936 he started as a consulting engineer in Houston. He became affiliated with McEvoy Co. and represented that organization as sales engineer until the recent promotion.

Keller Covering Southwest Louisiana

Frank Keller, Jr., for several years with the Inferno Co., Shreveport, La., as a sales representative and engineer in North Louisiana, now covers the Southwest Louisiana territory. His headquarters are at the Charleston Hotel in Lake Charles, from the first to the fifteenth of each month.

Mr. Keller is regarded as an authority on steam equipment. He covers all of the oil fields in Southwest Louisiana from Villa Platte to the Sabine River. He recently has installed 16 safety units, including Lowater alarms and fuel cutoff valves for a leading operator. The units are designed to enable the operators to maintain the proper water level in their boilers and to eliminate danger of explosions. Inferno manufactures a complete line of steam equipment for oil-field boilers.

BUSINESS NOTES

O. G. Houser, 310 Thompson Building, Tulsa, has been appointed manufacturers' representative to handle the Acme regulators in the oil industry.

Conner Receives 30-Year Service Pin From B. F. Goodrich Co.

Chester F. Conner, sales promotion manager of the mechanical division of the B. F. Goodrich Co., Akron, Ohio, is receiving his 30-year service pin from

J. H. Connors, vice president in charge of the mechanical division. Mr. Conner, a graduate of Buchtel College, in Akron, joined Goodrich in 1910 as a sales correspondent in the mechanical division. He was made assistant to the Boston district manager in 1916 and in 1923 returned to the sales promotion department in Akron. He was named to his present post in 1930.

Parsons Appointed Sales Manager

Hayes Parsons has been appointed sales manager of Link-Belt Speeder Corp., shovel-drag-line-crane manufacturer, 301 West Pershing Road, Chicago. For several years Mr. Parsons has represented Speeder Machinery Co., and (after the consolidation) Link-Belt Speeder Corp. in the Seattle, Wash., district.

Mr. Parsons has served successively as shop mechanic, rivet-crew foreman, factory service man, West Coast resident service supervisor, West Coast factory representative, and assistant sales manager, since joining the old Speeder Machinery Co. in 1924. Mr. Parsons also served as Seattle branch manager for Austin-Western Co. and for 3 years was a salesman for the Seattle Austin-Western distributor.

The recently organized New York chapter of the Nomads holds its first dinner meeting

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Santa Fe, New Mexico.

NEW MEXICO WEEKLY OIL REPORT. Send for sample copy. BOX 968, HOBBS, N. M.

HAVE blocked 4,000 acres in 18-12, Barton County, Kansas. Hess Oil Co., Dwight Building, Kansas City, Missouri.

EAST TEXAS Trinity sand wildcats. Major Company blocks will start shortly. Two strikes recently made. Three others likely prospects next Sixty days. If you have some money and sense enough to give these Majors credit for having some sense, there's a likely chance you might make some quick money.
E. CROFT
Proctor, Texas.

CRANE-WARD County 20 ac. cheap in fee, under Magnolia lease. J. G. Smith, 215 Littlefield Bldg., Austin, Texas.

2,600 ACRES oil lease one year free for an oil test. Give reference. Box 362, Merkel, Taylor Co., Texas.

FOR SALE: 10 acres in Atoka Co., Oklahoma. NE¼, SW¼, SE¼, Sec. 9, Twp. 4 South, Range 13 East. James C. Barry, 3506 Legation St. N. W., Washington, D. C.

FOR SALE: In need of money will sacrifice 80-acre lease of my farm located in West Harrison County joining block which has just started drilling. Per acre $12.50 cash and $12.50 in oil. E. O. WILLIAMS, Marshall, Texas.

ILLINOIS OIL LEASES
120 a. between Centralia and Salem, one mile from production, 6 sands, ½ mile from test operations started, price $25 per acre. Commitment $25,000 deposit. Start test 60 days. Leases ½ to 2 miles from wildcat test, formations regular, running high about 180 feet. Prices $1 to $5 acre. Eastern Illinois. Sam J. Burkitt, Chrisman, Illinois.

FOR SALE: 40 acres, in productive area with mineral rights in Seminole County, Oklahoma, SW¼ NE¼ Sec. 12, Township 10N, Range 7. East of Indian Meridian. Earl Kelly, Rt. 2, Fort Morgan, Colorado.

DEALERS, Investors, Investigate heavy Leasing and Drilling quickly making up to 100 for one and better. References Satisfied Investors. E. M. Adams, Marshall, Texas.

GIVE 1/16th interest 80-acre shallow oil lease to party to drill and equip first well. C. L. Milburn, Corsicana, Texas.

Leases and Drilling Blocks

FOR SALE Oil and gas leases and small production located in Kentucky shallow field, and leases located in Clay County, Tenn. Have for sale two tracts of proven Fluorspar and Zinc deposits; reports furnished on request. W. P. Harley, Bowling Green, Kentucky.

NEW MEXICO
STATE OIL AND GAS LEASES
40 acres and multiples thereof. $6.00 to $60.00 per forty. Buy direct. Save those dollars. No middle man to pay; no salesman to bother you! Twenty years in the business without a complaint. Write for information.
HARRY S. WRIGHT
New Mexico State Lessee
Wright Bldg., Farmington, New Mexico.

ATTENTION Drillers and Contractors—A fine proposition for a well in Idaho, for immediate action. Shallow wells show oil and gas. Communicate with Lafe Boone, Route 2, Boise, Idaho.

WEST TEXAS OIL LEASES
AND ROYALTIES
If you wish to buy or sell producing or Non-producing oil leases or royalties located in West Texas or Eastern New Mexico; Address:
AMERICAN NATIONAL BROKERAGE CO.
Post Office Box 516
Levelland, Texas.

OIL lease; SW. ¼ of Sec. 15-16s-15e, Plaquemines Parish, La. Owner, J. Manz, St. Johns Hospital, Iola, Kansas.

NATURAL GAS AND WATER FLOODS
Experienced operator desires direct association with private investors sums upwards of $2,000. Monthly income from actual production in shallow area's Eastern Kansas. No guess work as developments prove what can be done. Best proposals in the area. State amount available and will submit definite proposals. E. C. Helm, P.O. Box 366, Paola, Kansas.

FOR complete and accurate coverage of the new Artesia Area, read The ARTESIA (New Mexico) ENTERPRISE. $2 a year.

160 ACRES cheap; three wells pumping one barrel each a day; tanks, 15 h.p. engine, pump house and equipment. Box 157, Parsons, Kansas.

FOREST CITY BASIN Leases near new discovery well and location I am about to drill. E. C. HELM, Paola, Kansas.

Wanted

$300,000 LOAN WANTED; security first mortgage Texas properties; salvage value $1,000,000; operating 50 years. Brokers protected. J. L. Aritt, 17 East 42nd, New York.

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BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog, samples on request. Burkhart Ptg. & Sta. Co. 115 S. Cinn. Tulsa, Oklahoma.

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FOR LEASE — Five to 10 years, shop now being used by Hydril Co.; two or more acres, all steel building with 15-ton crane, trackage, office building, all utilities, etc. Available May 15.
M. R. DUCEY, Owner
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Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

JOHN MORRIS, Box 5411, Philadelphia, studied records 5000 financial houses. Found only 191 buy new issues. $4.00.

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Jackson, Miss. 3-Hart Bldg., Across Street from Heidelberg Hotel. Ownership maps All Over Mississippi.

1940 OIL AND GAS FIELD MAP
Texas, Eastern New M. Price $1.00.
Wildcat Map $3.00 Published monthly.
ZINGERY OIL MAP CO., Fort Worth, Tex.

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ROYALTY, lease and oil investors in any state. Catalogue. Flory Co., Box 105, Fort Worth, Texas.

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PETROLEUM Engineer with successful sales experience in oil well pumping equipment. Preferably under 35 years of age. Qualifications and full particulars desired in first letter. Strictly confidential. Address Box K-491, The Oil and Gas Journal, Tulsa, Oklahoma.

CHEMIST with degree from a university and at least three years' experience in a petroleum refinery control laboratory desired by a modern central state refinery. Address Box K-542, The Oil and Gas Journal, Tulsa, Oklahoma.

Situations Wanted

I KNOW something of installations and connections, bottom-hole tests, paraffin removal, mud conditioning, care of cores and samples, office work, and plain ditch digging. I'm 28, single, have three years flush production experience and 2 college degrees (not engineering). Other useful abilities, would try selling, go anywhere. Can you use me? Box 2222, Norman, Oklahoma.

GRADUATE CHEMIST, 4 yrs.' experience laboratory research, engineering design, construction and operation of catalytic refg. proc. Familiar with ref. oper. Excellent references. Address Box K-564, The Oil and Gas Journal, Tulsa, Okla.

CERTIFIED Public Accountant, two university degrees, exceptional experience in oil accounting wants connection in a supervisory capacity with growing oil company. Address Box K-590, The Oil and Gas Journal, Tulsa, Oklahoma.

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7 Lines	$2.45	$4.20	$5.95	$7.70
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9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

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Tulsa, Oklahoma

Situations Wanted

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WANT work with Diesel engines or Diesel future. Trained by Hemphill School. Free to travel. Address Box K-591, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM Engineer: Young production engineer desires position as scout or engineer with small company or independent operator. Address Box K-593, The Oil and Gas Journal, Tulsa, Oklahoma.

For Sale—Equipment

FOR SALE: Now erected Oklahoma City field, one type T-19-3-B Pritchard and one Model 21-ZA-9 Fluor Cooling towers. I.T.I.O., Bartlesville, Oklahoma.

FOR SALE: Practically new 45 h.p. Cooper-Bessemer Single Cylinder Diesel Pumping Engine with Reverse Clutch and Air Starting Equipment. Replaced by pumping unit after short, easy service. Guaranteed perfect condition in every respect. This is a real bargain. Bridgeport Machine Company, Wichita, Kansas.

FOR SALE: in Oklahoma City field, 10 twin type 80 horizontal cooper single acting 4 cycle engine compressors, Indian Territory Illuminating Oil Company, Bartlesville, Oklahoma.

FOR SALE: Star #28 beam steam machine lines and tools complete. Box 592, Emporia, Kansas.

NOTICE — CABLE TOOL CONTRACTORS, Save money; used wire lines. All sizes up to 5,000 ft. long. See us before you buy. General Tool & Supply Co., P.O. Box 4387, Oklahoma City, Oklahoma.

FOR SALE CHEAP: Complete string of Cable Tools with Drilling Derrick. Gas-gasoline Engine power. Just completed drilling well with these ourselves. All in good shape and everything complete. Bridgeport Machine Company, Wichita, Kansas.

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For Sale—Equipment

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25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE at Oklahoma City Warehouse, large quantity 4¾" o.d. 16#, 5" o.d. 15# slotted-perforated liner and Stanciff screen pipe. I. T. I. O. Company, Bartlesville, Okla.

FOR SALE: Model B-B, OK Pipe Cleaning Machine with cut-off attachment and 6-cylinder gasoline Engine. Capacity 2" to 12" pipe. Splendid condition. One we've used and kept in good shape ourselves. Less than half price, f.o.b. Wichita, Kansas. Bridgeport Machine Company.

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WANT 84 ft. steel derrick complete for use in central southern Kansas. Give full description, location, and best cash price. Address Box K-565, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: Small Butane unit to add to casing-head gas plant. State cash price, capacity and details of equipment.
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Glasgow, Kentucky.

WILL purchase for cash, small natural gasoline plant, preferably located in Kansas, but will consider Oklahoma or Texas unit. Must be genuine bargain. Might consider inactive plant at better than junk value. Address Box K-580, The Oil and Gas Journal, Tulsa, Oklahoma.

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Several second-hand spudders, all kinds of cable tools, casing up to 12⅝" for shallow wells, one medium size tractor and any other kind of equipment suitable for cable tool drilling. Will buy in large quantities, for several operators. Will arrive in Tulsa, from Cuba, on or about May 18. Write to Chas. Ginart, c/o General Delivery, Tulsa, Oklahoma.

WANTED—Two used Clark 12 in. bore by 14 in. stroke double acting compressor cylinders complete. Type RA-28. Address Hanley and Bird, Bradford, Pennsylvania.

WANTED used, high-class walnut office furniture and rugs. Box K-592, The Oil and Gas Journal, Tulsa, Oklahoma.

Experimental Gas Lift at Sulphur Effective in Recovering Oil

(Continued from Page 77)

gas plant in respect to the gas handled during March is shown in accompanying Table 3.

Selection of the type of gas-lift valves and system used in the wells has been based on the individual characteristics of the wells as regards bottom-hole pressure, permeability, and the particular history as it pertains to recovery from the sand.

The producing sands represented in the nine wells now on the lift range in depth from 3,250 ft. to 5,431 ft. with hardly any two from the same sand (see Table 1). In the same table are shown the casing and tubing sizes which are important factors in the determination of gas volume and pressure control.

Operation of the plant is semiautomatic, including oil-pressure and water-temperature controls that shut the engines down in case of trouble. A closed engine-jacket water system is provided, the water being circulated through coils located in the water-cooling tower. In the same tower are located the gas coils through which the gas from the low-pressure cylinders pass to the high-pressure cylinders of the compressors. The closed water system has a capacity of approximately 65 bbl. requiring around 5 bbl. daily of makeup water. The closed system has been provided because the supply of good water in the field is limited. The main gas line from the plant through the field is 4 in. in diameter and extends at present about a mile and a quarter around the field to the location of the present farthest well. Two-inch lines take off from the main line to the respective wells. All christmas-tree hookups are streamlined to provide best efficiency in handling large volumes of fluid with low pressures.

On a late report there were 49 producing wells in the field, of which 2 were flowing 75 bbl. daily, 38 pumping 2,150 bbl. and 9 flowing by gas lift 275 bbl. Although the production of the gas-lift wells is small in comparison with the total for the field and averages only about 30 bbl. each for the nine wells in the system, it is much greater production than what these wells originally were capable of making. Pumping continues as the major lifting practice but the gas lift, which has now outgrown its experimental status, is scheduled to become a more important phase of secondary-recovery practices followed in the field.

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